

A man with short dark hair and a goatee, wearing a black shirt, is sitting in a black office chair. He is looking towards the camera with a slight smile. His hands are clasped together on a desk in front of him. The background is slightly blurred, showing what appears to be an office setting with a desk and some papers. Overlaid on the image is Arabic text in a white, stylized font. At the bottom left, there are two small blue heart icons.

اللهم أنر قبر من حنّ له القلب
اللهم هب له سعة في قبره لا يراها نهاية
هب لمضجعه طيباً و لظلمته نوراً
ولذنوبه غفراناً و برّد قبره
وزده احساناً فوق احسانه
واجعل الجنة مسكنه

Back to Filters

Question 1 of 102

A 56-year-old man with known Hodgkin’s lymphoma is admitted to the ward with a 2-week history of increasing chest pain and a 2-day history of a swollen plethoric face, prominent neck veins and swelling of his right arm. He was diagnosed 2 years ago and unsuccessfully treated with ABVD chemotherapy; he received a stem cell transplant 4 months ago. A superior vena cava obstruction has now been diagnosed, and a CT of his neck and thorax has demonstrated a large tumour encapsulating his superior vena cava that is beginning to invade his myocardium.

What is the best immediate management for this man?

- | | |
|---|------------------------------------|
| A | Stenting of SVC |
| B | Radiotherapy |
| C | Emergency debulking surgery |
| D | Intravenous dexamethasone and LMWH |
| E | Diamorphine infusion |

2307

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Previous QuestionSkip Question

Calculator✔

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Back to Filters

Question 1 of 102

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What is the best immediate management for this man?



- A Stenting of SVC
- B Radiotherapy
- C Emergency debulking surgery
- D Intravenous dexamethasone and LMWH
- E Diamorphine infusion

Explanation



- D Intravenous dexamethasone and LMWH

This combination will give some initial immediate relief and then you can decide whether radiotherapy, SVC stenting or even surgery may be appropriate. Whilst these discussions are taking place, the dexamethasone and LMWH can be alleviating symptoms.

- A Stenting of SVC

SVCO is caused by external pressure of a tumour, usually a lung primary, on the SVC. SVC stenting is an effective procedure performed by the interventional radiology team to try and reopen the vessel. It is a valid treatment option for the patient in due course. However, it is key to read the question carefully. The question asks for the best immediate management for the patient and SVC stenting, although a possible subsequent treatment, is not the best immediate management.

- B Radiotherapy

Radiotherapy is likely to be one of the treatment modalities used to try and help treat the patient. However, the question asks for the best immediate management. Radiotherapy will take days if not weeks to take effect and there are other treatments that can alleviate symptoms in the meantime, meaning this cannot be the best immediate management.

- C Emergency debulking surgery

This is a highly risky procedure for any patient to undergo and requires assessment from the surgical teams. Due to the high mortality and morbidity risks, this is unlikely to be a treatment option for this cohort of patients although each case should be examined on an individual basis.

- E Diamorphine infusion

This might have been suggested to try and alleviate breathing or in an aim to palliate the patient. SVCO infers a poor prognosis for the patient, but usually in the region of months rather than hours to days and, as such, palliation with diamorphine is inappropriate.

2307

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Next Question

Previous Question	Tag Question
Feedback	End Session

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Back to Filters

Question 2 of 102

A 45-year-old former television presenter is admitted with increasing confusion. Breast cancer was diagnosed 6 years ago and she had a lumpectomy of her right breast and local radiotherapy. Two years ago she had further surgery and chemotherapy for a recurrence. Her husband tells you she has become more confused over the last week. She has lost weight, has no appetite, feels sick and is constipated. Medication comprises anastrozole, laxatives and morphine sulphate tablets together with antiemetics prn. On examination, she is pale, agitated and looks dry. Her right arm is swollen. She is afebrile, pulse 104 bpm and regular, BP 95/57 mmHg and her respirations are 20 breaths/min at rest. She is dull to percussion at the right lung base with decreased air entry. Her liver is non-tender and descends 4 cm below the right costal margin. The neurological examination is normal. CXR shows a pleural effusion at the right base. Urine is pale and dilute and negative for leucocytes and nitrites.

Results of blood tests show:

Na ⁺	136 mmol/l
K ⁺	3.4 mmol/l
Urea	16.3 mmol/l
Creatinine	142 μmol/l
Bilirubin	13 μmol/l
Glucose	6.1 mmol/l
Albumin	31 g/l
ALT	121 U/l
ALP	269 U/l
CRP	58 μg/l
WCC	10.4 x10 ⁹ /l
Hb	9.4 g/dl
PLT	347 x10 ⁹ /l

What is the most likely diagnosis?

- A

Empyema
- B

Brain metastases
- C

Urinary tract Infection
- D

Sepsis of unknown origin
- E

Hypercalcaemia of malignancy

2308

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Previous Question

Skip Question

Calculator

Normal Values

Question 2 of 102

Results of blood tests show:

Na ⁺	136 mmol/l
K ⁺	3.4 mmol/l
Urea	16.3 mmol/l
Creatinine	142 μmol/l
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Hb	9.4 g/dl
PLT	347 x10 ⁹ /l

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- | | |
|---|------------------------------|
| A | Empyema |
| B | Brain metastases |
| C | Urinary tract Infection |
| D | Sepsis of unknown origin |
| E | Hypercalcaemia of malignancy |

- | | |
|---|------------------------------|
| E | Hypercalcaemia of malignancy |
|---|------------------------------|

Hypercalcaemia in malignancy is a paraneoplastic syndrome and the most common metabolic emergency in oncology and palliative care, affecting 40% of breast cancer and myeloma patients. Usually the corrected calcium concentration is >2.8 mmol/l before the onset of symptoms. It presents with increasing thirst and polyuria (nephrogenic diabetes insipidus), anorexia, nausea and vomiting, constipation, dehydration and increasing confusion, and is easily confused with terminal disease progression. This patient exhibited many of the classic symptoms. Treatment is usually with IV fluids. If these fail to normalise calcium levels, IV bisphosphonates can be used. The calcium concentration usually takes 2–3 days to come down, and bisphosphonates may be required monthly to keep the level down.

- | | |
|---|---------|
| A | Empyema |
|---|---------|

An empyema is a pus-filled space that develops in the pleural cavity usually after a bacterial infection in the lung. The reduced air entry at the right base and CXR findings could raise empyema as a possibility, but you would expect the patient to have a temperature, a preceding chest infection, a cough and to have a higher respiratory rate, making this a far less likely diagnosis.

- | | |
|---|------------------|
| B | Brain metastases |
|---|------------------|

diagnosis of cancer and new onset. However, the fact that her neurological examination was completely normal and she also had symptoms such as constipation, pleural effusion and dilute urine, make a diagnosis of brain metastases less likely.

- | | |
|---|-------------------------|
| C | Urinary tract Infection |
|---|-------------------------|

If the patient were to have UTI, we would expect her urine to be more concentrated, possibly cloudy and offensive smelling and for a urine dipstick to be positive for leucocytes and nitrites. However, in this patient's case, the urine was dilute and tested negative for

- | | |
|---|----------------------------|
| D | Sensitis of unknown origin |
|---|----------------------------|

This could be considered due to the blood results, which showed a raised CRP, and acute kidney injury coupled with hypotension and confusion could point towards sepsis. However, you would expect a raised temperature and tachycardia plus infective changes on the CXR or a positive urine dipstick. This makes sepsis of unknown origin less likely as a diagnosis.

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Food for thought

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Back to Filters

Question 3 of 102

A 61-year-old police chief is admitted with a sudden-onset loss of power in his lower limbs. He was diagnosed with a right renal cell carcinoma 18 months ago and at laparotomy was found to have intraperitoneal spread. He has had increasing mid-back pain over the last 2 weeks. He last passed urine the previous night and opened his bowels a couple of days ago. This morning he couldn't get out of bed. On examination, he looks anxious but otherwise well. Neurological examination demonstrates: increased tone in his lower limbs and no power in his legs; a sensory level at T6 to light touch and pin-prick; brisk knee and ankle reflexes and upgoing plantars; and normal upper limbs and central nervous system. CXR reveals two cannonball metastases in his right lung and three in his left. A urinary catheter has been inserted and a residual of 1.4 l of urine has drained out. A provisional diagnosis of cord compression has been made.

Which of the following investigations will best help management?

- | | |
|---|----------------------|
| A | Bone scan |
| B | X-ray dorsal spine |
| C | MRI whole spine |
| D | CT thoracic spine |
| E | Contrast myelography |

2309

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Question 3 of 102

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Back to Filters

Question 4 of 102

A 50-year-old man presents with a 2-month history of shortness of breath, haemoptysis and a 5-cm lesion on CXR. CT shows mediastinal lymphadenopathy. On examination he is noted to have facial plethora and enlarged neck veins. A diagnosis of superior vena cava obstruction (SVCO) is made.

What is the most appropriate first-line therapy?



- | | |
|---|---------------------|
| A | Radiotherapy |
| B | Chemotherapy |
| C | SVC stent insertion |
| D | Dexamethasone |
| E | Fluids |

2315

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Previous QuestionSkip Question

Calculator



Normal Values



Back to Filters

Question 4 of 102

A 50-year-old man presents with a 2-month history of shortness of breath, haemoptysis and a 5-cm lesion on CXR. CT shows mediastinal lymphadenopathy. On examination he is noted to have facial plethora and enlarged neck veins. A diagnosis of superior vena cava obstruction (SVCO) is made.

What is the most appropriate first-line therapy?



- A Radiotherapy
- B Chemotherapy
- C SVC stent insertion
- D Dexamethasone**
- E Fluids

Explanation



D Dexamethasone

High-dose dexamethasone (either 16 mg OD or 8 mg BD) with PPI can be administered to help alleviate symptoms such as swelling. This would be first-line treatment alongside LMWH to treat possible thrombi. While this is taking effect, the patient can undergo further investigations and discussions regarding further treatments such as SVC stenting, radiotherapy or surgery.

A Radiotherapy

Radiotherapy is an important treatment to consider in a patient with SVCO; however, it would not be the first-line treatment as it can take days to weeks to take effect. It is usually more effective in SVCO caused by haematological malignancies compared to lung cancers. Also, if SVC stenting is being considered, it is important to perform the stent insertion prior to radiotherapy as the latter can cause fibrosis which can make subsequent stent insertion difficult.

B Chemotherapy

Chemotherapy is a systemic treatment that can take weeks to months to take effect, and the extent of effectiveness depends on the cell type. Therefore, it is not the most appropriate first-line treatment but should be considered in each case of SVCO as a possible treatment option.

C SVC stent insertion

SVC stenting can be a very successful treatment and is usually performed by the interventional radiology teams. The key point is that SVC stenting would not be the first-line treatment as it can take time to organise, but should be considered in patients with SVCO.

E Fluids

There is very little evidence for the benefit of fluids in a patient with SVCO. They may be considered if a patient is struggling with oral intake due to their SVCO, but the fluids themselves will not help treat the SVCO.

SVCO is extrinsic compression of the SVC by tumour. Potential causes of SVCO include the following.

- Primary bronchial carcinoma
- Lymphadenopathy due to lymphoma
- Constrictive pericarditis
- Chronic fibrotic mediastinitis
- Clot associated with indwelling catheter or pacemaker wires
- Thymoma
- Localised infection
- Thyroid cancer
- Synovial cell carcinoma
- Teratoma
- Retro-sternal goitre
- Mediastinal fibrosis
- Thoracic aortic aneurysm
- Aortic aneurysm
- Angiosarcoma.

2315

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Back to Filters

Question 5 of 102

A 50-year-old man presents with a 2-week history of SOB and haemoptysis. He has smoked 20 cigarettes a day for many years. On examination there is no clubbing and no lymphadenopathy. CXR shows a mass in the left upper lobe. CT shows no evidence of metastases.

Investigations:

Na ⁺	140 mmol/l
K ⁺	4.6 mmol/l
Urea	5.0 mmol/l
Creatinine	100 mol/l
Corrected calcium	2.74 mmol/l
Hb	12 g/dl
WCC	7 × 10 ⁹ /l
PLT	400 × 10 ⁹ /l
Tumour markers	normal

What is the most likely histological diagnosis?

- A

Small-cell carcinoma
- B

Squamous-cell carcinoma
- C

Adenocarcinoma
- D

Carcinoid
- E

Large-cell carcinoma

2316

Submit

Previous Question

Skip Question

Calculator

Normal Values

Question 5 of 102

Investigations:

Na ⁺	140 mmol/l
K ⁺	4.6 mmol/l
Urea	5.0 mmol/l
Creatinine	100 μmol/l
Corrected calcium	2.74 mmol/l
Hb	12 g/dl
WCC	$7 \times 10^9/l$
PLT	$400 \times 10^9/l$
Tumour markers	normal

3

- | | |
|---|-------------------------|
| A | Small-cell carcinoma |
| B | Squamous-cell carcinoma |
| C | Adenocarcinoma |
| D | Carcinoid |
| E | Large-cell carcinoma |

- | | |
|---|-------------------------|
| B | Squamous-cell carcinoma |
|---|-------------------------|

A	Small-cell carcinoma
---	----------------------

C	Adenocarcinoma
---	----------------

D	Carcinoid
---	-----------

E	Large-cell carcinoma
---	----------------------

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Tag Question

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Responses Incorrect:	5
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Back to Filters

Question 6 of 102

A 50-year-old man is undergoing therapy for lung cancer. He has had a 3-day history of severe back pain and now presents with a 24 h history of difficulty in walking. He has also noticed difficulty in passing urine over the last 12 hours. An urgent MRI spine shows a soft tissue mass compressing the spinal cord at T12.

What is the best immediate management of this patient?



- | | |
|---|------------------|
| A | Surgical opinion |
| B | Radiotherapy |
| C | IV dexamethasone |
| D | Chemotherapy |
| E | Physiotherapy |

2317

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Back to Filters

Question 6 of 102

A 50-year-old man is undergoing therapy for lung cancer. He has had a 3-day history of severe back pain and now presents with a 24 h history of difficulty in walking. He has also noticed difficulty in passing urine over the last 12 hours. An urgent MRI spine shows a soft tissue mass compressing the spinal cord at T12.

What is the best immediate management of this patient?



- A

Surgical opinion
- B

Radiotherapy
- C

IV dexamethasone
- D

Chemotherapy
- E

Physiotherapy

Explanation



- C

IV dexamethasone

IV dexamethasone (usually 16 mg OD or 8 mg BD) with PPI cover can be commenced as soon as the patient arrives in hospital or as soon as the possibility of spinal cord compression is raised. The steroid will help reduce swelling around the vertebral body and can start to take effect while further investigations and decisions regarding future management are made.

- A

Surgical opinion

It would be worth considering whether the patient is an appropriate candidate for surgery. As a rule of thumb, the surgical team only consider patients with a prognosis of greater than 6 months to account for the recovery time post-surgery. Regardless of whether the patient is a surgical candidate, surgery would not be the first-line treatment in either case and is, therefore, not the correct answer.

- B

Radiotherapy

Radiotherapy is the often the treatment of choice for patients with spinal cord compression. However, in order for the treatment to be planned, the patient often has to undergo a MRI of the whole spine which can take up to 24 h following admission. Once the treatment is planned and then administered, it can take days or even weeks for the radiotherapy to start taking effect. The question asks for the best immediate treatment. Radiotherapy can be an effective treatment but can take a while to organise. It is possible to give an alternative treatment in the meantime.

- D

Chemotherapy

Chemotherapy is a systemic treatment that can be used to reduce the cancer burden within a patient. However, it is not always appropriate, for example, if a patient has chemotherapy-resistant disease or if the patient is too frail to withstand treatment. Even in those who would benefit from chemotherapy, it can take weeks to months for the chemotherapy to take effect and there are other treatments that start to work in the short term, meaning chemotherapy is not the best immediate management.

- E

Physiotherapy

Patients with spinal cord compression often present with acute back pain and neurological symptoms such a leg weakness. Physiotherapy can be a tempting thought. However, the spine needs to be imaged to assess how stable it is prior to mobilising the patient. If there are significant bony metastases, then the spine can be unstable and it is unsafe for the patient to be mobilising extensively. The usual advice is for bed rest until the MRI spine is reviewed to assess whether the spine is stable or not.

2317

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Next Question

Previous Question	Tag Question
Feedback	End Session

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Back to Filters

Question 7 of 102

A 29-year-old man presents to his GP complaining of marked weight loss over the last 3 months associated with drenching night sweats. He is also complaining of generalised itchiness, which he finds quite irritating and embarrassing. He reports no past medical problems and is a non-smoker. He has had no recent travel history of note. On examination, he is apyrexial but there is noted to be generalised symmetrical lymphadenopathy in the cervical and supraclavicular areas. There is no hepatomegaly or splenomegaly. Blood investigations are ordered and the results are as follows:

Erythrocyte sedimentation rate (ESR)	188
Hb	12.8 g/dl
WCC	4.7 x 10 ⁹ /l
PLT	230 x 10 ⁹ /l
Na ⁺	139 mmol/l
K ⁺	4.2 mmol/l
Urea	4.4 mmol/l
Creatinine	90 mol/l

A CT scan of the chest, abdomen and pelvis confirms the involvement of two lymph node areas in the neck only; lymph node biopsy confirms the diagnosis of Hodgkin’s disease.

Based on the above information, what would be the clinical stage of this patient’s disease according to the Ann Arbor classification?

- A

Stage I B
- B

Stage II A
- C

Stage II B
- D

Stage III A
- E

Stage III B

6667

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Previous QuestionSkip Question

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Back to Filters

Question 7 of 102

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A	Stage I B
B	Stage II A
C	Stage II B
D	Stage III A
E	Stage III B

Explanation ⚙

C	Stage II B
---	------------

Stage II refers to involvement of two or more lymph node areas on the same side of the diaphragm. Stage II B refers to an absence of B symptoms (fever, night sweats and weight loss (>10%). This patient fulfils the criteria for stage II disease and has B symptoms, meaning he has Stage IIB disease.

A	Stage I B
---	-----------

Stage I refers to involvement of a single lymph node area or a single extra-nodal site, and B refers to B symptoms such as drenching night sweats, fevers (>38°C) or >10% weight loss. Looking at this patient’s CT findings and symptoms, he is greater that stage I disease and has B symptoms.

B	Stage II A
---	------------

Stage II refers to involvement of two or more lymph node areas on the same side of the diaphragm. Stage A refers to an absence of B symptoms (fever, night sweats and weight loss (>10%). This patient fulfils the criteria for stage II disease but does have B symptoms.

D	Stage III A
---	-------------

Stage III refers to involvement of lymph node areas on both sides of the diaphragm. However, this patient only has two lymph nodes in the neck, meaning he has Stage II disease. Stage A refers to an absence of B symptoms (fever, night sweats and weight loss (>10%). However, this patient does suffer with B symptoms, meaning Stage IIIA is incorrect.

E	Stage III B
---	-------------

Stage III refers to involvement of lymph nodes on both sides of the diaphragm, whereas this patient has only two neck nodes. Stage B refers to a patient having at least one of the following symptoms: fevers, night sweats or >10% weight loss, which this patient does, meaning overall a staging of IIIB is incorrect.

Hodgkin’s disease is a potentially curable malignant lymphoma, slightly more common in males than females and with a bimodal distribution, with a first peak in young adults (15–34 years) and a second peak in older individuals (>55 years). It is characterised histologically by the presence of neoplastic Reed–Sternberg cells against a background of reactive mixed inflammatory cells. The aetiology is unknown. A histological sample is always required to make the diagnosis, and the Ann Arbor classification¹ is most commonly used for staging the disease. Both clinical examination and imaging techniques are used to establish the stage of the disease. The staging system is as follows:

- Stage I: Involvement of a single lymph node area or a single extranodal site
- Stage II: Involvement of two or more lymph node areas on the same side of the diaphragm
- Stage III: Involvement of lymph node areas on both sides of the diaphragm
- Stage IV: Multiple involvement of extra-nodal organs. Involvement of the liver or the bone marrow is considered stage IV disease.

For staging classification, the spleen is considered a lymph node area. Each stage is further designated as A or B depending on the absence or presence of B symptoms, respectively. A stage is labelled B if there is the presence of one or more of the following: fever (temperature >38°C), drenching night sweats and/or unexplained loss of more than 10% of body weight within the preceding 6 months.

¹Smithers DW. Summary of papers delivered at the Conference on Staging in Hodgkin’s Disease (Ann Arbor). *Cancer Research*, 1971, 31: 1869–70.

6667

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Next Question

Previous Question	Tag Question
Feedback	End Session

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Back to Filters

Question 8 of 102

A 33-year-old man presents to his GP after his wife discovered a lump in his right testicle. The lump is painless and the patient is not aware how long the lump has been present. He is otherwise fit and well and has no other past medical history, except mumps at the age of 8. He is a smoker of 10 cigarettes per day. On examination a hard, well-defined non-transilluminating lump (approximately 1 cm) is felt attached to the right testis. After laboratory investigations, scrotal ultrasonography was performed which showed the presence of a homogeneous hypoechoic testicular mass; CT scanning of the abdomen and pelvis with IV and oral contrast failed to identify any metastatic disease. A radical inguinal orchidectomy was performed and histology on the removed lump showed it to be a pure seminoma that was limited to the testis.

Which of the following serum tumour markers would you expect to be elevated in this patient and is most indicative of the diagnosis?

A	α -Fetoprotein
B	Lactate dehydrogenase
C	β -Human chorionic gonadotrophin
D	Placenta-like alkaline phosphatase
E	Acid phosphatase

6668

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Previous Question

Skip Question

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Back to Filters

Question 8 of 102

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- A

α -Fetoprotein
- B

Lactate dehydrogenase
- C

β -Human chorionic gonadotrophin
- D

Placenta-like alkaline phosphatase
- E

Acid phosphatase

Explanation ⚙

- C

β -Human chorionic gonadotrophin

β -human chorionic gonadotrophin (β -hCG) is the most specific marker for a patient with a testicular seminoma, since it is secreted by the syncytiotrophoblast cells within GCTs. However, it is only elevated in 5-10% of patients with seminoma.

- A

α -Fetoprotein

α -Fetoprotein is often seen in patients with hepatocellular carcinoma or in some testicular tumours. However, this patient has a testicular seminoma which does not fit with a raised α -fetoprotein, as this is secreted by the yolk sac elements.

- B

Lactate dehydrogenase

LDH is a fairly non-specific marker and can give a general idea of tumour burden, but is not specific to testicular seminoma.

- D

Placenta-like alkaline phosphatase

Placenta-like alkaline phosphatase can be elevated in patients with seminoma, especially with increasing tumour burden, but it may also increase with smoking.

- E

Acid phosphatase

Acid phosphatase was the first real tumour marker, used in the 1940s and 1950s, to monitor prostate cancer, but is not useful in monitoring or diagnosing seminoma.

6668

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Next Question

Previous Question

Feedback

Tag Question

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Session Progress

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Back to Filters

Question 9 of 102

A 67-year-old man presents to his GP with his wife complaining of non-specific symptoms consisting of anorexia, malaise, nausea, fatigue and mid-epigastric pain that have gradually worsened over the past few months. He also reports that he has lost 5kg in weight over this same period of time. He confides that he is feeling depressed and had attributed his symptoms to his depression but has come to see the GP at the insistence of his wife who feels that the patient’s skin colour has changed. He has also been recently diagnosed with diabetes mellitus controlled with tablets and is a smoker of a pack a day since his mid-twenties. General examination of the patient confirmed the weight loss and showed some mild mid-epigastric tenderness as well as a yellow hue to the sclera. Routine lab studies were ordered and the results are as follows:

Hb	12.1 g/dl
White cell count (WCC)	4.3 x 10 ⁹ /l
Platelets	550 x 10 ⁹ /l
Sodium	139 mmol/l
Potassium	4.2 mmol/l
Urea	7.9 mmol/l
Creatinine	90 mol/l
Serum total bilirubin	77 μ mol/l
Alkaline phosphatase (ALP)	401 U/l
Aspartate aminotransferase (AST)	51 U/l
Alanine aminotransferase (ALT)	45 U/l
γ -Glutamyl transpeptidase (γ GT)	99 U/l
Amylase	91 U/l

In view of the above history and results, what would be the most likely diagnosis in this patient?

- A

Duodenal ulcer
- B

Adenocarcinoma of the stomach
- C

Choledocholithiasis
- D

Adenocarcinoma of the pancreas
- E

Chronic pancreatitis

6670

Submit

Previous Question

Skip Question

Calculator

Normal Values

Question 9 of 102

Routine lab studies were ordered and the results are as follows:

Hb	12.1 g/dl
White cell count (WCC)	4.3 x 10 ⁹ /l
Platelets	550 x 10 ⁹ /l
Sodium	139 mmol/l
Potassium	4.2 mmol/l
Urea	7.9 mmol/l
Creatinine	90 μmol/l
Serum total bilirubin	77 μmol/l
Alkaline phosphatase (ALP)	401 U/l
Aspartate aminotransferase (AST)	51 U/l
Alanine aminotransferase (ALT)	45 U/l
γ-Glutamyl transpeptidase (γGT)	99 U/l
Amylase	91 U/l

ST

- | | |
|---|--------------------------------|
| A | Duodenal ulcer |
| B | Adenocarcinoma of the stomach |
| C | Choledocholithiasis |
| D | Adenocarcinoma of the pancreas |
| E | Chronic pancreatitis |

The answer is Adenocarcinoma of the pancreas -

Next Question

Tag Question

End Session

Difficulty: Easy

Peer Responses %

Session Progress

Responses Correct:	0
Responses Incorrect:	9
Responses Total:	9
Responses % Correct:	0%

Question 10 of 102

Which of the following statements is true?

- | | |
|---|---|
| A | Corrected serum calcium = measured calcium (mmol/l) - [40 + serum albumin (g/l)] x 0.027 |
| B | Corrected serum calcium = measured calcium (mmol/l) + [40 - serum albumin (g/l)]/0.027 |
| C | The patient should be immobilised |
| D | The patient should be rehydrated with intravenous normal saline |
| E | 90 mg of Pamidronate in 500 ml of normal saline should be administered immediately over a 2-hour period |

Submit

Skip Question

Back to Filters

Question 10 of 102

A 69-year-old woman known with metastatic breast cancer presents to the Emergency Department complaining of nausea and vomiting that has increased over the last 48 h, associated with polyuria and polydipsia. She is also complaining of abdominal pain. An Emergency Medicine physician suspects she may have hypercalcaemia and orders an urgent calcium and albumin level. Her corrected serum calcium level is 3.1 mmol/l.

Which of the following statements is true?

- A

Corrected serum calcium = measured calcium (mmol/l) - [40 + serum albumin (g/l)] x 0.027
- B

Corrected serum calcium = measured calcium (mmol/l) + [40 - serum albumin (g/l)]/0.027
- C

The patient should be immobilised
- D

The patient should be rehydrated with intravenous normal saline
- E

90 mg of Pamidronate in 500 ml of normal saline should be administered immediately over a 2-hour period

Explanation



- D

The patient should be rehydrated with intravenous normal saline

The first line of treatment is to try and rehydrate the patient with normal saline. After at least 2 l of normal saline (usually 4-6 l), you can then consider the addition of bisphosphonates to try lowering the calcium levels.

- A

Corrected serum calcium = measured calcium (mmol/l) - [40 + serum albumin (g/l)] x 0.027

Since hypoalbuminaemia is common in malignancy and will affect the total serum calcium concentration, the correct serum calcium concentration is obtained using the formula:

- B

Corrected serum calcium = measured calcium (mmol/l) + [40 - serum albumin (g/l)]/0.027

The correct formula is: Corrected serum calcium = measured calcium (mmol/l) + [40 - serum albumin (g/dl)] × 0.027.

- C

The patient should be immobilised

This is actually the opposite of what is recommended. Immobilisation is usually recommended in situations such as spinal cord compression.

- E

90 mg of Pamidronate in 500 ml of normal saline should be administered immediately over a 2-hour period

Pamidronate should be considered for patients with hypercalcaemia. However, the first-line treatment is normal IV saline. Only if this does not reduce calcium levels would you consider administering a bisphosphonate.

6672

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Average

Peer Responses %

Session Progress

Responses Correct:	0
Responses Incorrect:	10
Responses Total:	10
Responses - % Correct:	0%

Back to Filters

Question 11 of 102

A 51-year-old woman visits her GP after becoming concerned about the change in appearance of a mole on her right thigh. The mole has been there for about 2 years but in the last few months the patient has noticed that it has become increasingly dark in colour and appears to have grown in size. On examination she has a slightly elevated brown lesion on the anterior aspect of her right thigh. The lesion measures 7 mm and has an irregular border. The GP immediately refers the patient to the local dermatology unit for an excisional biopsy for a suspected diagnosis of melanoma.

Which of the following is NOT a primary risk factor for the development of melanoma?



A	Fair complexion
B	A personal or a family history in a first-degree relative of melanoma
C	Female sex
D	Greater than 50 naevi, 2 mm or greater in diameter
E	A sunny climate located near the equator

6673

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Previous QuestionSkip Question

Calculator✔

Normal Values✔

Back to Filters

Question 11 of 102

A 51-year-old woman visits her GP after becoming concerned about the change in appearance of a mole on her right thigh. The mole has been there for about 2 years but in the last few months the patient has noticed that it has become increasingly dark in colour and appears to have grown in size. On examination she has a slightly elevated brown lesion on the anterior aspect of her right thigh. The lesion measures 7 mm and has an irregular border. The GP immediately refers the patient to the local dermatology unit for an excisional biopsy for a suspected diagnosis of melanoma.

Which of the following is NOT a primary risk factor for the development of melanoma?



- A

Fair complexion
- B

A personal or a family history in a first-degree relative of melanoma
- C

Female sex
- D

Greater than 50 naevi, 2 mm or greater in diameter
- E

A sunny climate located near the equator

Explanation



C

Female sex

Male patients (especially those >50 years old) are more likely to develop a malignant melanoma.

A

Fair complexion

Fair complexion is a well-known risk factor for malignant melanoma.

B

A personal or a family history in a first-degree relative of melanoma

Patients with a family history of melanoma are more likely to develop melanoma themselves.

D

Greater than 50 naevi, 2 mm or greater in diameter

This is a well-known risk factor for malignant melanoma.

E

A sunny climate located near the equator

Patients who live near the equator, suffer sunburn and have greater exposure to UV radiation have an increased risk of developing malignant melanoma.

6673

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Next Question

Previous Question

Feedback

Tag Question

End Session

Difficulty: Easy

Peer Responses %

Session Progress

Responses Correct:	0
Responses Incorrect:	11
Responses Total:	11
Responses - % Correct:	0%

Back to Filters

Question 12 of 102

As part of your training rotation, you are about to start a genetic counselling clinic with your consultant advising families of the risk of familial cancer syndromes.

In which of the following is the strongest association between a chromosomal abnormality and a known cancer syndrome?

- A

Retinoblastoma 13q14 gene (Rb)
- B

Hereditary non-polyposis colon cancer 2p gene (HNPC)
- C

Multiple endocrine neoplasia type (MEN) I 13q gene (MEN1)
- D

Neurofibromatosis (NF) type I 11q gene (NF1)
- E

Neurofibromatosis type (NF) II 17p gene (NF2)

6674

Submit

Previous Question

Skip Question

Calculator

✔

Normal Values

✔

Back to Filters

Question 12 of 102

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- C Multiple endocrine neoplasia type (MEN) I 13q gene (MEN1)
- D Neurofibromatosis (NF) type I 11q gene (NF1)
- E Neurofibromatosis type (NF) II 17p gene (NF2)

Explanation Settings icon

A Retinoblastoma 13q14 gene (Rb)

Approximately 45% of all retinoblastomas are hereditary and exhibit autosomal dominant inheritance with approximately 90% penetrance.

B Hereditary non-polyposis colon cancer 2p gene (HNPC)

The correct answer would be hereditary non-polyposis colon cancer 1 and chromosome 2p gene MSH2.

C Multiple endocrine neoplasia type (MEN) I 13q gene (MEN1)

The correct association is MEN I and chromosome 11q.

D Neurofibromatosis (NF) type I 11q gene (NF1)

The correct association is NF type I and chromosome 17q gene NF1.

E Neurofibromatosis type (NF) II 17p gene (NF2)

The correct association is NF type II and chromosome 22 gene NF2.

6674

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Very Difficult

Peer Responses %

Session Progress

Responses Correct:	0
Responses Incorrect:	12
Responses Total:	12
Responses - % Correct:	0%

Back to Filters

Question 13 of 102

A 49-year-old man is undergoing chemotherapy for high-grade non-Hodgkin’s lymphoma. Two days after starting chemotherapy, the patient reports not feeling well and routine blood tests show that he has rapidly developed hyperuricaemia, hyperkalaemia, hyperphosphataemia, hypocalcaemia and acute renal failure.

Which of the following statements is true relating to this patients condition?

- A

Treat electrolyte abnormalities
- B

Urinary acidisation
- C

Continue with aggressive chemotherapeutic regimen to ensure the greatest chance of success
- D

Use diuretics, such as furosemide or mannitol
- E

No dietary modifications are necessary

6675

Submit

Previous Question

Skip Question

Calculator

✔

Normal Values

✔

Back to Filters

Question 13 of 102

A 49-year-old man is undergoing chemotherapy for high-grade non-Hodgkin’s lymphoma. Two days after starting chemotherapy, the patient reports not feeling well and routine blood tests show that he has rapidly developed hyperuricaemia, hyperkalaemia, hyperphosphataemia, hypocalcaemia and acute renal failure.

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Urinary acidisation
- C

Continue with aggressive chemotherapeutic regimen to ensure the greatest chance of success
- D

Use diuretics, such as furosemide or mannitol
- E

No dietary modifications are necessary

Explanation



- A

Treat electrolyte abnormalities

This patient is exhibiting signs of tumour lysis syndrome (TLS). TLS tends to occur in patients with bulky, rapidly proliferating, treatment-responsive tumours and is classically associated with acute leukaemias and high-grade non-Hodgkin’s lymphomas. TLS is characterised by the rapid development of hyperuricaemia, hyperkalaemia, hyperphosphataemia, hypocalcaemia and acute renal failure (ARF), typically 48–72 h after initiation of chemotherapy. LDH levels are checked prior to commencing chemotherapy to identify patients that have a high risk of tumour lysis syndrome, enabling prophylactic measures, such as commencing allopurinol and administration of rasburicase, to prevent development of TLS.

- B

Urinary acidisation

Urinary alkalinisation (with sodium bicarbonate) prevents renal precipitation of uric acid and allopurinol is given prior to commencing treatment to reduce the conversion of nucleic acid by-products to uric acid, thereby reducing the incidence or degree of TLS.

- C

Continue with aggressive chemotherapeutic regimen to ensure the greatest chance of success

All chemotherapy should be withheld if the patient develops TLS until the patient has recovered fully. TLS can be a potentially fatal and should be taken seriously if a patient develops it.

- D

Use diuretics, such as furosemide or mannitol

This in fact opposite of what patients are advised. Osmotic diuretics may actually contributes contributes to the precipitation of uric acid in the renal tubules and is therefore not recommended, especially when the patient has developed TLS.

- E

No dietary modifications are necessary

Patients are advised to increase fluid intake to over 2.5 l per day. Dietary modification, such as restricting dietary potassium, is also recommended.

6675

Rate this question: ⚙️☆☆☆☆

Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Difficult

Peer Responses %

Session Progress

Responses Correct:	0
Responses Incorrect:	13
Responses Total:	13
Responses - % Correct:	0%

Back to Filters

Question 14 of 102

A 45-year-old premenopausal woman has been identified as having a high chance of developing breast cancer due to a strong family history of breast and ovarian cancer. She initially declined prophylactic drug treatment with tamoxifen due to concerns raised by an article she read. She has since been diagnosed with breast cancer. Following initial treatment with surgery, she is returning to the clinic to discuss further treatment with tamoxifen. She raises concerns about being on tamoxifen long-term.

Which of the following statements is true?

A	There is no clinical evidence showing any benefit in this lady taking tamoxifen
B	She will remain on tamoxifen indefinitely
C	Taking tamoxifen can reduce the risk of a cancer developing in her other breast
D	Her cholesterol levels will increase
E	She will develop osteoporosis

6676

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Back to Filters

Question 14 of 102

A 45-year-old premenopausal woman has been identified as having a high chance of developing breast cancer due to a strong family history of breast and ovarian cancer. She initially declined prophylactic drug treatment with tamoxifen due to concerns raised by an article she read. She has since been diagnosed with breast cancer. Following initial treatment with surgery, she is returning to the clinic to discuss further treatment with tamoxifen. She raises concerns about being on tamoxifen long-term.

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- A

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- B

She will remain on tamoxifen indefinitely
- C

Taking tamoxifen can reduce the risk of a cancer developing in her other breast
- D

Her cholesterol levels will increase
- E

She will develop osteoporosis

Explanation



- C

Taking tamoxifen can reduce the risk of a cancer developing in her other breast

Tamoxifen has been shown to reduce the risk of recurrence in the previously affected breast and also to reduce the risk of developing breast cancer in the contralateral breast. In patients who have developed metastatic breast cancer, tamoxifen has halted and, in some cases, reduced the cancer burden within a patient.

- A

There is no clinical evidence showing any benefit in this lady taking tamoxifen

Tamoxifen is useful in patients with breast cancer and in those with an increased risk of breast cancer even if they do not have the disease. There is evidence that taking tamoxifen when premenopausal with a moderate or high risk of developing breast cancer can reduce the patient’s chances of developing breast cancer. Taking tamoxifen after a diagnosis of breast cancer reduced the risk of recurrencealso reduces the risk of developing cancer in the also reduced the risk of cancer in the other breast.

- B

She will remain on tamoxifen indefinitely

After surgical intervention, tamoxifen reduces the risk of recurrence of ductal carcinoma *in situ* and early stage invasive disease. This is the basis for patients for being commenced on tamoxifen following surgical intervention. It is usually taken once daily for five years only. Tamoxifen can be taken for a longer period if the patient has metastatic disease.

- D

Her cholesterol levels will increase

In fact, the opposite has been observed with patients exhibiting a reduction in cholesterol levels once on tamoxifen.

- E

She will develop osteoporosis

Tamoxifen may not directly prevent osteoporosis but it has been shown to slow down the rate of bone loss when used prior to aromatase inhibitors. Usually, patients suffer a small loss in bone density but this is not felt to be significant. Osteoporosis is a multifactorial condition and cannot be solely attributed to the use of tamoxifen.

6676

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Next Question

Previous Question	Tag Question
Feedback	End Session

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Responses Correct:	0
Responses Incorrect:	14
Responses Total:	14
Responses - % Correct:	0%

Back to Filters

Question 15 of 102

A 17-year-old man presents to his GP complaining of lower left sided back pain that has been present for a few weeks. He reports that it initially started off intermittently but has now become more intense. On further questioning, he admits to having lost about 4 kg in weight over the last month. He denies any travel history. On examination, a tender and palpable mass can just be felt over his left iliac crest. An urgent MRI scan is requested by the GP as well as routine blood investigations. The blood results show a mild anaemia but no leucocytosis. The MRI findings are compatible with a diagnosis of Ewing’s sarcoma.

Which of the following are associated with a poor prognosis?

- | | |
|---|--|
| A | Age less than 12 years |
| B | Female sex |
| C | Reduced serum lactate dehydrogenase levels |
| D | Anaemia |
| E | Elevated alkaline phosphatase levels |

6677

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Back to Filters

Question 15 of 102

A 17-year-old man presents to his GP complaining of lower left sided back pain that has been present for a few weeks. He reports that it initially started off intermittently but has now become more intense. On further questioning, he admits to having lost about 4 kg in weight over the last month. He denies any travel history. On examination, a tender and palpable mass can just be felt over his left iliac crest. An urgent MRI scan is requested by the GP as well as routine blood investigations. The blood results show a mild anaemia but no leucocytosis. The MRI findings are compatible with a diagnosis of Ewing’s sarcoma.

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- | | |
|---|--|
| A | Age less than 12 years |
| B | Female sex |
| C | Reduced serum lactate dehydrogenase levels |
| D | Anaemia |
| E | Elevated alkaline phosphatase levels |

Explanation

Ewing’s sarcoma is the most lethal malignant primary bone tumour derived from the red bone marrow. It is most common in children and adolescents and rare after the age of 30 years. It has a male-to-female ratio of 3 : 2. The earliest symptom is pain, which is usually intermittent but becomes increasingly intense. Delay in the diagnosis can occur due to the fact that the clinical picture may be similar to that of acute or chronic osteomyelitis. However, eventually most patients have a large palpable rapidly growing mass, which is tense and tender. Associations with a poor prognosis include the male sex, age > 12 years, elevated lactate dehydrogenase levels, anaemia and a poor response to chemotherapy.

6677

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Difficult

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Responses Correct:	0
Responses Incorrect:	15
Responses Total:	15
Responses - % Correct:	0%

Back to Filters

Question 16 of 102

A 65-year-old woman presents to her GP complaining of a painless lump in the lower part of her anterior neck which was found incidentally as she was fiddling around with her necklace. She is otherwise fit and well and denies any recent chest or throat infections. She is a non-smoker. On examination, the GP confirms the presence of a solitary hard immobile lump measuring approximately 2 cm in the patient’s lower anterior neck, which moves with swallowing and appears to be positioned in the thyroid gland. The patient is afebrile and the remainder of the physical examination is normal. The patient is referred for a fine needle aspiration biopsy and relevant laboratory studies. The biopsy confirms that the patient has a papillary carcinoma of the thyroid.

Which of the following statements are true about this condition?

- | | |
|---|--|
| A | Papillary carcinoma is the second most common thyroid malignancy and represents approximately 10% of cases |
| B | There is an association with familial adenomatous polyposis |
| C | Cervical lymph node metastases from papillary carcinomas are uncommon |
| D | There is no association between this type of thyroid cancer and radiation exposure as a child |
| E | Serum thyroglobulin measurements are useful as a tumour marker after both total and partial thyroid ablation |

6678

Submit

Previous QuestionSkip Question

Calculator✔

Normal Values✔

Question 16 of 102



A	Papillary carcinoma is the second most common thyroid malignancy and represents approximately 10% of cases
B	There is an association with familial adenomatous polyposis
C	Cervical lymph node metastases from papillary carcinomas are uncommon
D	There is no association between this type of thyroid cancer and radiation exposure as a child
E	Serum thyroglobulin measurements are useful as a tumour marker after both total and partial thyroid ablation

Papillary carcinoma of the thyroid is the most common thyroid carcinoma and accounts for 80% of such cases. It is a slow growing and well-differentiated carcinoma but it has a propensity for spread to the cervical lymph nodes. The male to female ratio is 1 : 3 with females having an overall better prognosis. Risk factors for developing this condition include excessive intake of iodine and external radiation to the neck. Thyroidectomy and radioiodine ablation are the mainstays of therapy. Since thyroglobulin is synthesised by well-differentiated thyroid carcinomas, it can serve as a useful tumour marker for assessment of recurrence of the tumour but only after total thyroid ablation.

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Previous Question

Tag Question

Feedback

End Session

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Responses Correct:	0
Responses Incorrect:	16
Responses Total:	16
Responses - % Correct:	0%

Back to Filters

Question 17 of 102

A 45-year-old multiparous woman presents to her GP complaining of several months of non-specific ailments including lower abdominal pain, abdominal distension and feeling bloated. She reports no change in her diet and does not weigh herself, so cannot comment on her weight. There has been no change in her bowel habit. The only medical history of note is that she had an early stage carcinomatous lump removed from one breast 7 years ago. She is on the oral contraceptive pill and is a lifelong non-smoker. On examination the patient is apyrexial and there are no other positive clinical findings, apart from mild obesity. However, as the patient is lying down the GP percusses her abdomen and believes she may have a small amount of ascitic fluid, but finds it difficult to demonstrate shifting dullness. No abdominal or pelvic masses are felt. Routine blood tests are ordered and investigations, including a chest X-ray and ultrasound of the abdomen and pelvis, are requested. The abdominal ultrasound confirms the presence of ascites and the pelvic ultrasound confirms the presence of a mass in the right ovary.

Which of the following is a significant risk factor in this patient for the development of ovarian carcinoma?

- | | |
|---|--------------------------------------|
| A | Multiparity |
| B | Carcinoma of the breast |
| C | Non-smoker |
| D | Being on the oral contraceptive pill |
| E | Her age |

6679

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Back to Filters

Question 17 of 102

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Which of the following is a significant risk factor in this patient for the development of ovarian carcinoma?

- A

Multiparity
- B

Carcinoma of the breast
- C

Non-smoker
- D

Being on the oral contraceptive pill
- E

Her age

Explanation ⚙

- B

Carcinoma of the breast

A previous history of breast cancer increases the risk of the patient subsequently developing ovarian cancer. The commonest inherited genes, which infer a greater risk of developing breast and ovarian cancer, are BRCA1 and BRCA2.

- A

Multiparity

Studies have shown pregnancy to be a protective factor in patients with regard to developing ovarian cancer.

- C

Non-smoker

Smoking is a known risk factor for ovarian cancer, with 3% of all ovarian cancer cases in the UK being linked to tobacco: Parkin DM, Boyd L, Walker LC. The fraction of cancer attributable to lifestyle and environmental factors in the UK in 2010. Summary and conclusions. *Br J Cancer* 2011; 105 (S2):S77-S81).

- D

Being on the oral contraceptive pill

Surprisingly, the contraceptive pill is actually protective and reduces the risk of developing ovarian cancer.

- E

Her age

Risk of developing ovarian cancer increases with age, and patients are most commonly diagnosed in their seventh decade of life. This patient is very young to be diagnosed with ovarian cancer but does have other factors in her history that predispose her to the disease.

6679

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Next Question

Previous Question

Feedback

Tag Question

End Session

Difficulty: Average

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Session Progress


Responses Correct:	0
Responses Incorrect:	17
Responses Total:	17
Responses - % Correct:	0%

Back to Filters

Question 18 of 102

A young patient undergoing chemotherapy summons the nurses to report pain and swelling at the site of the infusion cannula. The oncology registrar assumes that this is due to extravasation of the chemotherapeutic agent.

Which of the following would be part of your management of this patient?

- | | | |
|---|---|---|
| A | Stop the infusion and remove the cannula |  |
| B | Administer oral corticosteroids to reduce inflammation at the cannula site | |
| C | Consult with a plastic surgeon for any doxorubicin or daunorubicin extravasation injuries | |
| D | In the case of vinca alkaloids, immediately apply a cold pack | |
| E | Stop the infusion and administer IV fluids | |

6681

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Back to Filters

Question 18 of 102

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Which of the following would be part of your management of this patient?

- A

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≡
- B

Administer oral corticosteroids to reduce inflammation at the cannula site
- C

Consult with a plastic surgeon for any doxorubicin or daunorubicin extravasation injuries
- D

In the case of vinca alkaloids, immediately apply a cold pack
- E

Stop the infusion and administer IV fluids

Explanation ⚙

- C

Consult with a plastic surgeon for any doxorubicin or daunorubicin extravasation injuries

Doxorubicin or daunorubicin extravasation injuries are particularly prone to causing ulceration, particularly on the back of the hand, and hence a plastic surgery consultation is likely to be needed.

- A

Stop the infusion and remove the cannula

After stopping the infusion and immobilising the arm, the next step would be to aspirate it through the cannula PRIOR to removing it, in an aim to aspirate as much of the drug as possible.

- B

Administer oral corticosteroids to reduce inflammation at the cannula site

Patients are sent home with topical corticosteroids and strict instructions to contact the department urgently if the extravasation site becomes red, blackened, ulcerated and/or painful.

- D

In the case of vinca alkaloids, immediately apply a cold pack

In cases of extravasation of vinca alkaloids, patients should have a heat compress immediately applied to the affected area.

- E

Stop the infusion and administer IV fluids

The cannula is not working correctly and as such the infusion of chemotherapy drug must be stopped urgently. Following this, nothing should be administered via the cannula and it should be aspirated to remove any chemotherapy drug. Treatment is with topical corticosteroid, plastics referral (if required) and agent-specific antidotes, after receiving specialist advice.

6681

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Difficult

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Session Progress

Responses Correct:	0
Responses Incorrect:	18
Responses Total:	18
Responses - % Correct:	0%

Back to Filters

Question 19 of 102

A 32-year-old man presents for yearly review after orchidectomy for a testicular neoplasm.

Which of the following blood tests is likely to be most sensitive for detecting tumour recurrence?

- A

Acid phosphatase
- B

Alkaline phosphatase
- C

PSA
- D

Testosterone levels
- E

β -Human chorionic gonadotrphin (β -HCG)

7046

Submit

Previous Question

Skip Question

Calculator

Normal Values

Back to Filters

Question 19 of 102

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Which of the following blood tests is likely to be most sensitive for detecting tumour recurrence?

- A

Acid phosphatase
- B

Alkaline phosphatase
- C

PSA
- D

Testosterone levels
- E

β -Human chorionic gonadotrphin (β -HCG)

Explanation ⚙

- E

β -Human chorionic gonadotrphin (β -HCG)

Along with α -fetoprotein (AFP) and LDH, β -human chorionic gonadotrophin levels are measured to monitor for recurrence and also to monitor the burden of disease. In 70% of testicular tumours either β -HCG or α -fetoprotein is raised. They can also be raised in ovarian, cervical, endometrial and trophoblastic neoplasms.

- A

Acid phosphatase

Acid phosphatase was one of the first tumour markers used in clinical practice. It was used to identify patients with prostate cancer. However, in more recent times, advances and the identification of more specific tumour markers have meant that acid phosphatase has fallen out of favour.

- B

Alkaline phosphatase

Alkaline phosphatase has been used as a tumour marker in many gonadal and urological cancers (e.g. testicular germ cell), but is not the mainstay in clinical practice.

- C

PSA

PSA is a useful tumour marker in the diagnosis and management of prostate cancer, but adds little value when dealing with testicular seminoma.

- D

Testosterone levels

This patient would still be expected to produce testosterone given he has only had a unilateral orchidectomy. However, testosterone is not routinely used to monitor for testicular seminoma and would therefore not be useful in diagnosing a recurrence in this patient.

Overall Explanation

The incidence of testicular tumours is 2-3 cases/100 000 men per year, and these account for 1-2% of all cancers in males. Average age at presentation is 30-36 years. Management depends on stage: orchidectomy is the mainstay of therapy, ± the addition of radiotherapy or chemotherapy.

7046

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Easy

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Session Progress

Responses Correct:	0
Responses Incorrect:	19
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Back to Filters

Question 20 of 102

A 65-year-old man presents with dysphagia, dyspnoea, haemoptysis, early morning headaches, facial congestion and oedema of the upper limbs. On examination, the jugular veins are distended. Heart sounds are normal. Chest X-ray shows round shadows in the right lower lobe, bilateral hilar lymphadenopathy and right pleural effusion. Fibre-optic bronchoscopy reveals lesions in the right lower lobe bronchi. He is referred to a consultant surgeon who rules out surgery.

What is the most likely reason that surgery has been ruled out in this case?

- A

Age 65 years
- B

Oesophageal involvement
- C

Superior vena cava obstruction
- D

Bilateral hilar lymphadenopathy
- E

Lesions in the lower bronchi

7293

Submit

Previous QuestionSkip Question

Calculator✔

Normal Values✔

Question 20 of 102

What is the most likely reason that surgery has been ruled out in this case?

A	Age 65 years
B	Oesophageal involvement
C	Superior vena cava obstruction
D	Bilateral hilar lymphadenopathy
E	Lesions in the lower bronchi

Involvement of the superior vena cava by lung cancer is a contraindication for surgery. Early morning headaches, facial congestion, upper limb oedema and jugular venous distension are suggestive of this condition. Age over 65 years is a relative contraindication as the operative mortality rate exceeds the expected 5-year survival rate. Presence of a tumour within 2 cm of either main bronchus indicates inoperability, as there would be insufficient resection margins for pneumonectomy.

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Back to Filters

Question 21 of 102

A 59-year-old man under follow-up for cirrhosis secondary to hepatitis C infection comes to see you for his regular outpatient appointment. He has lost 5 kg in weight since his last clinic appointment 4 months ago and you notice his abdomen is larger than you would expect for someone with his physical frame. On examination you note splenomegaly, shifting dullness and you are unable to feel a liver edge due to his abdominal girth. You note that he has had some liver function tests and are able to compare the results to the bloods he had prior to his last clinic appointment.

	Today	Four months ago
ALT	59 IU/l	62 IU/l
ALP	220 IU/l	117 IU/l
Bilirubin	22 μ mol/l	17 μ mol/l
Albumin	26g/l	35g/l

Which of the following features most likely indicates that he may have developed hepatocellular carcinoma?

- A

Splenomegaly
- B

Low albumin
- C

Development of ascites
- D

Non-palpable liver
- E

Elevated serum alkaline phosphatase levels

7294

Submit

Previous Question

Skip Question

Calculator

Normal Values

Question 21 of 102

	Today	Four months ago
ALT	59 IU/l	62 IU/l
ALP	220 IU/l	117 IU/l
Bilirubin	22 μmol/l	17 μmol/l
Albumin	26g/l	35g/l

ay

- ### Explanation



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Back to Filters

Question 22 of 102

A 53-year-old woman presents to her GP with a painless mass in the lower right quadrant of her left breast associated with new-onset nipple discharge. The patient is extremely anxious as there is a strong family history of breast cancer within her family. A diagnosis of breast cancer is strongly suspected and she is referred to the triple breast assessment clinic. A subsequent biopsy confirms a diagnosis of breast cancer.

The patient then goes on to have surgery to remove her breast mass, which is successfully carried out with good margins. She is also noted as having positive lymph nodes and is listed for discussion at the MDT. In the meantime, she contacts the breast cancer nurses as she is concerned about the results. Her main concern is regarding the prognosis.

For the MDT, which of the following is most useful in determining her breast cancer prognosis?

- A

Location of the tumour
- B

Size of the tumour
- C

Extent of skin involvement
- D

Histological grading
- E

Lymph node metastases

7295

Submit

Previous Question

Skip Question

Calculator

Normal Values

Back to Filters

Question 22 of 102

A 53-year-old woman presents to her GP with a painless mass in the lower right quadrant of her left breast associated with new-onset nipple discharge. The patient is extremely anxious as there is a strong family history of breast cancer within her family. A diagnosis of breast cancer is strongly suspected and she is referred to the triple breast assessment clinic. A subsequent biopsy confirms a diagnosis of breast cancer.

The patient then goes on to have surgery to remove her breast mass, which is successfully carried out with good margins. She is also noted as having positive lymph nodes and is listed for discussion at the MDT. In the meantime, she contacts the breast cancer nurses as she is concerned about the results. Her main concern is regarding the prognosis.

For the MDT, which of the following is most useful in determining her breast cancer prognosis?

- A

Location of the tumour
- B

Size of the tumour
- C

Extent of skin involvement
- D

Histological grading
- E

Lymph node metastases

Explanation ⚙

- E

Lymph node metastases

Lymph node metastases confirm that the cancer has spread outside of the breast, albeit to adjacent lymph nodes. Lymph node metastases, along with tumour size and histological grading, are key determinants in the Nottingham prognostic index which is used to determine prognosis following surgery. Out of all three of these factors, lymph node metastases have the greatest impact on future prognosis.

Nottingham prognostic index:

$$NPI = [0.2 \times S] + N + G$$

S = size of the lesion in cm

N = node status (0 nodes = 1, 1-4 nodes = 2, >4 nodes = 3)

G = tumour grade (Grade I = 1, Grade II = 2, Grade III = 3)

- A

Location of the tumour

Location of tumour is important when assessing treatment options such as surgery and radiotherapy, but does not directly affect prognosis.

- B

Size of the tumour

Size of the tumour can affect prognosis, with a larger tumour often leading to a poorer prognosis but this is not the greatest factor out of those listed.

- C

Extent of skin involvement

Skin involvement, such as peau d'orange (orange peel skin), can be a sign of breast cancer but is difficult to quantify and is not used as a prognostic indicator.

- D

Histological grading

Histological grading gives information regarding how aggressive a tumour is and can be instrumental in determining prognosis. However, the question asks for the 'most useful factor' in determining prognosis and histological grading is not the most useful factor.

7295

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Average

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Session Progress

Responses Correct:	0
Responses Incorrect:	22
Responses Total:	22
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Back to Filters

Question 23 of 102

A 63-year-old woman with breast cancer had her last cycle of chemotherapy 8 days ago. She now presents to the admission unit with acute shortness of breath. She complains of pain on the right side of her chest. She has no other medical history and had some anti-emetics prescribed for her following her chemotherapy, which she has not used. On examination she has reduced air entry on the right side of her chest, some crackles bibasally and she appears flushed and tachycardic. Her blood pressure is 114/76, her heart rate is 115, temperature is 39.4, respiratory rate is 24 and her oxygen saturation is 95% on 28% oxygen.

What would be the immediate treatment required for this patient?

- A

IV piperacillin with tazobactam
- B

Therapeutic heparin at 1.5 mg/kg
- C

35% oxygen
- D

Chest drain
- E

Broad-spectrum oral antibiotics

7296

Submit

Previous Question

Skip Question

Calculator

✔

Normal Values

✔

Back to Filters

Question 23 of 102

A 63-year-old woman with breast cancer had her last cycle of chemotherapy 8 days ago. She now presents to the admission unit with acute shortness of breath. She complains of pain on the right side of her chest. She has no other medical history and had some anti-emetics prescribed for her following her chemotherapy, which she has not used. On examination she has reduced air entry on the right side of her chest, some crackles bibasally and she appears flushed and tachycardic. Her blood pressure is 114/76, her heart rate is 115, temperature is 39.4, respiratory rate is 24 and her oxygen saturation is 95% on 28% oxygen.

What would be the immediate treatment required for this patient?

- AIV piperacillin with tazobactam
- BTherapeutic heparin at 1.5 mg/kg
- C35% oxygen
- DChest drain
- EBroad-spectrum oral antibiotics

Explanation



- AIV piperacillin with tazobactam

This patient is neutropenic until proven otherwise and, as such, requires urgent IV antibiotics. Most hospitals employ a door-to-needle target of 1 h, meaning that patients should receive IV antibiotics within 1 h of arriving at the hospital. If the patient subsequently turns out not to be neutropenic, IV antibiotics can be converted to oral if clinically appropriate.

- BTherapeutic heparin at 1.5 mg/kg

It is reasonable to consider that this patient with a malignancy, chest pain and a history of acute shortness of breath may have suffered a pulmonary embolism and therefore requires treatment with subcutaneous heparin at a dose of 1.5 mg/kg (reduced if the patient is renally impaired). However, in this situation, there are other factors to consider. This patient has had chemotherapy and, although we are not told which regime, is possibly neutropenic and septic, meaning that antibiotics would need to be considered first. Heparin may subsequently be indicated.

- C35% oxygen

The patient’s saturation is adequate on 28% oxygen and does not require an increase in oxygen, although this would not cause the patient any harm.

- DChest drain

This patient could have a pleural effusion causing her shortness of breath and dullness to percussion on the right side of her chest. However, you would want radiological confirmation of this prior to inserting the drain to confirm your suspicions, meaning that this would not be your next management plan.

- EBroad-spectrum oral antibiotics

This patient is potentially neutropenic and as such requires urgent IV antibiotics. Oral antibiotics would be neither effective nor sufficiently rapid in treating sepsis if the patient was neutropenic. The patient may later be switched to oral antibiotics if stable and not neutropenic, or later on in her admission when she has clinically improved.

7296

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Next Question

- Previous QuestionFeedback
- Tag QuestionEnd Session

Difficulty: Average

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Session Progress

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Responses Total:	23
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Back to Filters

Question 24 of 102

A 65-year-old man presents with pain in the right loin, haematuria, anorexia and weight loss. He has no past medical history of note. On examination, his blood pressure is 160/100 mmHg.

Blood results:

Hb	8.9 g/dl
WCC	10 x 10 ⁹ /l
Platelets	220 x 10 ⁹ /l
MCH	29 pg
MCV	79 fl
Urea	3.4 mmol/l
Creatinine	97 µmol/l
Urate	0.27 mmol/l

An MRI scan reveals a lesion in the upper cortex of the right kidney with enlarged para-aortic nodes and involvement of the right renal vein.

What would be the most appropriate management in this case?

- A

Palliative treatment
- B

Partial nephrectomy followed by chemotherapy
- C

Radiotherapy
- D

Renal biopsy followed by nephrectomy and treatment with a kinase inhibitor
- E

Renal biopsy followed by nephrectomy

7297

Submit

Previous Question

Skip Question

Calculator

Normal Values

Question 24 of 102

Blood results:

An MRI scan reveals a lesion in the upper cortex of the right kidney with enlarged para-aortic nodes and involvement of the right renal vein.

3

- ### Explanation

Rate this question:

Previous Question Tag Question

Feedback End Session

Peer Responses %

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Back to Filters

Question 25 of 102

A 70-year-old Asian man who has recently come to the UK complains of weight loss, anorexia, a vague ache in the right upper abdomen and swelling of the abdomen over the past two months. He is a non-smoker and teetotaler. On examination an enlarged, tender, irregular liver is palpable. Ascites can be demonstrated.

What is the most likely diagnosis in this case?



- | | |
|---|--------------------------|
| A | Hydatid disease |
| B | Amoebic liver abscess |
| C | Chronic active hepatitis |
| D | Cirrhosis |
| E | Hepatocellular carcinoma |

7298

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Back to Filters

Question 25 of 102

A 70-year-old Asian man who has recently come to the UK complains of weight loss, anorexia, a vague ache in the right upper abdomen and swelling of the abdomen over the past two months. He is a non-smoker and teetotaler. On examination an enlarged, tender, irregular liver is palpable. Ascites can be demonstrated.

What is the most likely diagnosis in this case?

- A

Hydatid disease
- B

Amoebic liver abscess
- C

Chronic active hepatitis
- D

Cirrhosis
- E

Hepatocellular carcinoma

Explanation

The clinical features are highly suggestive of hepatocellular carcinoma. Amoebic liver abscess presents with similar symptoms, but ascites is not a feature. Hydatid disease, caused by *Echinococcus granulosus*, usually is asymptomatic except for a dull ache and swelling in the right hypochondrium. The rapid development of weight loss, anorexia and other symptoms is more suggestive of hepatocellular carcinoma than cirrhosis or chronic active hepatitis.

7298

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Next Question

Previous Question

Feedback

Tag Question

End Session

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Session Progress	
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Back to Filters

Question 26 of 102

A 50-year-old non-smoker, just returned from Vietnam, is found to have a solitary smooth round shadow on chest X-ray during a routine pre-employment medical examination.

What could be the most likely cause in this case?



- | | |
|---|-----------------------------|
| A | Primary bronchial carcinoma |
| B | Gastric carcinoma |
| C | Renal cell carcinoma |
| D | Pulmonary tuberculosis |
| E | Sarcoidosis |

7299

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Back to Filters

Question 26 of 102

A 50-year-old non-smoker, just returned from Vietnam, is found to have a solitary smooth round shadow on chest X-ray during a routine pre-employment medical examination.

What could be the most likely cause in this case?

- A

Primary bronchial carcinoma
- B

Gastric carcinoma
- C

Renal cell carcinoma
- D

Pulmonary tuberculosis
- E

Sarcoidosis

Explanation

The most common metastatic / secondary tumour that produces a solitary round shadow on chest X-ray is of renal origin.

Primary bronchial carcinoma is unlikely at this age in a non-smoker. The X-ray findings would also differ in that the edges of the tumour may have a fluffy or spiked appearance. The ipsilateral hilar lymph nodes are invariably involved in primary lung cancer.

Gastric cancer involves the mediastinal glands and spreads along the lymphatics of both lungs.

Bilateral hilar lymphadenopathy is a characteristic finding in sarcoidosis.

Patchy or nodular shadows in the upper zones, loss of volume and fibrosis, with or without cavitation, are features of pulmonary tuberculosis.

7299

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Next Question

- Previous Question

Feedback
- Tag Question

End Session

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Back to Filters

Question 27 of 102

A 45-year-old woman presents with frequent headaches, excessive sweating, reduction in peripheral vision, deepening of voice and amenorrhoea. She has also noticed a prominence of her lower jaw. On examination, there is mild hirsutism. Visual tests show bitemporal hemianopia. Investigations reveal a fasting blood glucose of 7.8 mmol/l and a 2-hour post-prandial value of 12.5 mmol/l. Prolactin is elevated at 1000. Her BP is elevated at 165/99 mmHg. An MRI scan shows a 20 mm pituitary adenoma.

What would be the most appropriate line of management in this case?

- | | |
|---|--|
| A | Cabergoline followed by trans-sphenoidal surgery |
| B | Trans-sphenoidal surgery |
| C | External radiotherapy followed by octreotide |
| D | Somatostatin analogue followed by trans-sphenoidal surgery |
| E | Pegvisomant in combination with a somatostatin analogue |

7301

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Question 27 of 102



A	Cabergoline followed by trans-sphenoidal surgery
B	Trans-sphenoidal surgery
C	External radiotherapy followed by octreotide
D	Somatostatin analogue followed by trans-sphenoidal surgery
E	Pegvisomant in combination with a somatostatin analogue

Somatostatin analogues may be associated with tumour shrinkage and resolution of some clinical symptoms prior to progression to trans-sphenoidal surgery, they are certainly useful in improving cardiovascular parameters and control of blood glucose. The presence of only a mild elevation in prolactin indicates that this is not likely to be a primary prolactin secreting tumour, instead the rise in prolactin is due to local pressure. Where prolactinomas are concerned, medical management is now the primary intervention.

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Feedback End Session

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Back to Filters

Question 28 of 102

An 11-year-old boy with acute lymphoblastic leukaemia is to start chemotherapy.

Blood tests show:

Hb	8.9 g/dl
WCC	125 x 10 ⁹ /l
platelets	75 x 10 ⁹ /l
urea	5.2 mmol/l
creatinine	87 mol/l



What is the definitive choice for the management of this case?

- A

Correct anaemia and thrombocytopaenia
- B

Treat infection
- C

Administer allopurinol
- D

Leucopheresis
- E

Start intravenous fluid therapy

7303

Submit

Previous Question

Skip Question

Calculator

Normal Values

Question 28 of 102

Blood tests show:

Hb	8.9 g/dl
WCC	$125 \times 10^9/\text{l}$
platelets	$75 \times 10^9/\text{l}$
urea	5.2 mmol/l
creatinine	87 mol/l

What is the definitive choice for the management of this case?

- | | |
|---|---------------------------------------|
| A | Correct anaemia and thrombocytopaenia |
| B | Treat infection |
| C | Administer allopurinol |
| D | Leucopheresis |
| E | Start intravenous fluid therapy |

If the blast cell count in the peripheral blood is very high ($> 100 \times 10^9/\text{L}$) the patient needs leucopheresis to prevent sludging of the capillary beds. This can be life-saving. Correction of anaemia and thrombocytopaenia using packed cells and platelet transfusions would also be necessary prior to commencement of chemotherapy. Cyclical combination chemotherapy comprising vincristine, prednisolone, L-asparaginase and doxorubicin forms the basis of most treatment regimens. Tumour lysis syndrome – a condition where chemotherapy causes a rapid necrosis of neoplastic cells that results in hypocalcaemia, hyperphosphataemia and hyperkalaemia. The increased phosphate levels are thought to lead to tissue deposition of calcium phosphate. This condition is potentially life-threatening but can usually be prevented by making sure that chemotherapy is not started until the uric acid level is normal and by diuresis established with intravenous fluids, or now with the use of rasburicase.

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[Previous Question](#)

Tag Question

Feedback

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Back to Filters

Question 29 of 102

A 57-year-old woman is found to have a WCC of $25 \times 10^9/l$ (44% lymphocytes) during a routine screening at a menopausal clinic. Her Hb is 12.5 g/dl and platelets $170 \times 10^9/l$. There is no lymphadenopathy or splenomegaly.

What would be the most appropriate management in this case?

- A

Start chlorambucil
- B

Use fludarabine as first line of treatment
- C

Commence α -interferon treatment
- D

Allogeneic bone marrow transplant
- E

Wait and watch

7304

Submit

Previous Question

Skip Question

Calculator

Normal Values

Question 29 of 102

What would be the most appropriate management in this case?

A	Start chlorambucil
B	Use fludarabine as first line of treatment
C	Commence α -interferon treatment
D	Allogeneic bone marrow transplant
E	Wait and watch

This lady most probably has chronic lymphocytic leukaemia (CLL). The disease may be asymptomatic and stable for many years. There is no advantage in starting treatment before there is a clinical indication such as anaemia, recurrent infections, bleeding, lymphadenopathy or increasing splenomegaly. Her current stage according to the Rai or the Binet staging systems for CLL is '0' or 'A' respectively, with a low risk. The median survival rate even without any treatment is more than 10 years.

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Responses Total:	29
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Back to Filters

Question 30 of 102

A 75-year-old man complains of headaches, visual disturbances and repeated episodes of epistaxis over the past few months. He feels unwell and has lost weight. On examination, the cervical lymph nodes are enlarged.

Blood tests:

Hb	11 g/dl
WCC	6 x 10 ⁹ /l
platelets	130 x 10 ⁹ /l
ESR	85 mm/1 st hr
Bone marrow aspirate	shows infiltration with lymphoplasmacytoid cells



What is the most likely diagnosis?

- A

Multiple myeloma
- B

Waldenstrom’s macroglobulinaemia
- C

Non-Hodgkin’s lymphoma
- D

Chronic lymphocytic leukaemia
- E

Chronic myeloid leukaemia

7305

Submit

Previous Question

Skip Question

Calculator

✔

Normal Values

✔

Back to Filters

Question 30 of 102

A 75-year-old man complains of headaches, visual disturbances and repeated episodes of epistaxis over the past few months. He feels unwell and has lost weight. On examination, the cervical lymph nodes are enlarged.

Blood tests:

Hb	11 g/dl
WCC	6 x 10 ⁹ /l
platelets	130 x 10 ⁹ /l
ESR	85 mm/1 st hr
Bone marrow aspirate	shows infiltration with lymphoplasmacytoid cells



What is the most likely diagnosis?

- A

Multiple myeloma
- B

Waldenstrom’s macroglobulinaemia
- C

Non-Hodgkin’s lymphoma
- D

Chronic lymphocytic leukaemia
- E

Chronic myeloid leukaemia

Explanation

Waldenstrom’s macroglobulinaemia is a type of lymphoplasmacytoid lymphoma. Patients tend to be older men and present with peripheral lymph node enlargement and symptoms that are due to bone marrow infiltration. The illness is associated with a paraprotein (IgM) that is responsible for symptoms of hyperviscosity. Clinical features include symptoms of hyperviscosity (headaches, visual disturbance), general malaise, weight loss, lymphadenopathy, anaemia and bleeding tendencies. The blood count usually shows a normal or low haemoglobin, white cell and platelet counts. ESR is raised. The blood film shows a rouleaux formation. A bone marrow aspirate usually shows infiltration with lymphoplasmacytoid cells. Protein electrophoresis shows an IgM paraprotein (>20g/l). Treatment is usually with alkylating agents in elderly patients. Younger patients may be started on doxorubicin-containing regimens. Recurrence is inevitable. In patients in whom hyperviscosity is the main problem, regular plasmapheresis can be helpful.

7305

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Next Question

Previous Question

Tag Question

Feedback

End Session

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Session Progress

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Responses - % Correct:	0%

Back to Filters

Question 31 of 102

A 70-year-old man complains of increasing delay and difficulty in passing urine. There is no history of pain or discolouration of the urine. A rectal examination reveals an enlarged, irregular prostate gland. A provisional diagnosis of prostatic cancer is made.

Which of the following investigations would be most useful in the staging the size and local spread of the prostatic cancer in this patient?

- A

Serum prostate-specific antigen levels
- B

Prostatic biopsy
- C

Bone scan
- D

Transrectal ultrasonography
- E

Excretion urography

7306

Submit

Previous Question

Skip Question

Calculator

✔

Normal Values

✔

Question 31 of 102

Which of the following investigations would be most useful in the staging the size and local spread of the prostatic cancer in this patient?

A	Serum prostate-specific antigen levels
B	Prostatic biopsy
C	Bone scan
D	Transrectal ultrasonography
E	Excretion urography

Transrectal ultrasonography is of value in defining the size of the gland and staging any tumour present with respect to size relative to the prostate gland and any local extension. Serum prostate-specific antigen levels are elevated in patients with prostatic cancer, but their utility with respect to screening is a subject of debate. Histological grading is not essential for tumour staging in this condition. Bone scan may be useful in determining metastatic spread.

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Responses Incorrect:	31
Responses Total:	31
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Back to Filters

Question 32 of 102

A 60-year-old smoker presents with cough, chest pain, dyspnoea and haemoptysis. A chest X-ray shows round shadows in the right intermediate lobe of the lung with ipsilateral hilar node involvement. A biopsy reveals small cell carcinoma, and CT and PET scanning does not suggest distant metastases, (either on the opposite side of the thorax or beyond the thoracic cavity).

What is the most appropriate treatment in this case?



- | | |
|---|---|
| A | Surgical resection |
| B | Combination chemotherapy and radiotherapy |
| C | External irradiation |
| D | Tracheobronchial stenting |
| E | Endobronchial irradiation (brachytherapy) |

7307

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Question 32 of 102

3

3

A	Surgical resection
B	Combination chemotherapy and radiotherapy
C	External irradiation
D	Tracheobronchial stenting
E	Endobronchial irradiation (brachytherapy)

Explanation

In small cell lung cancer the disease has almost always disseminated by the time of diagnosis and surgery is thus inappropriate. A very small percentage of patients have early disease which is amenable to lobectomy. These patients who progress to surgery always have stage 1 disease. Compared to non-small cell lung cancer, this tumour is very chemosensitive and approximately 75% of patients will respond to combination chemotherapy (eg etoposide and cisplatin). Single or combination chemotherapy has resulted in a five-fold increase in median survival, even in extensive disease, from 2 to 10 months. A small proportion of small cell lung cancer patients with limited disease will be cured. Endobronchial irradiation and tracheobronchial stents are used in the palliation of inoperable lung cancer for selected patients, with tracheobronchial narrowing from intraluminal tumour or extrinsic compression causing disabling breathlessness, intractable cough and complications, including infection, haemoptysis and respiratory failure.

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Next Question

Previous Question

Tag Question

Feedback

End Session

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Session Progress

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Responses Incorrect:	32
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Responses - % Correct:	0%

Back to Filters

Question 33 of 102

A 65-year-old female smoker presents with a 1-month history of generalised abdominal pain, abdominal distension and constipation. She has been feeling very tired for several months and in addition has lost 2kg in weight over this time period but feels that her abdomen has got larger. On examination she has a distended abdomen with shifting dullness. There are no palpable masses or evidence of organomegaly.

Which malignant cause is most likely to explain her presentation?

- A

Gastric carcinoma
- B

Medulloblastoma
- C

Small-cell carcinoma of the lung
- D

Ovarian cancer
- E

Retroperitoneal lymphoma

7523

Submit

Previous Question

Skip Question

Calculator

Normal Values

Back to Filters

Question 33 of 102

A 65-year-old female smoker presents with a 1-month history of generalised abdominal pain, abdominal distension and constipation. She has been feeling very tired for several months and in addition has lost 2kg in weight over this time period but feels that her abdomen has got larger. On examination she has a distended abdomen with shifting dullness. There are no palpable masses or evidence of organomegaly.

Which malignant cause is most likely to explain her presentation?

- A

Gastric carcinoma
- B

Medulloblastoma
- C

Small-cell carcinoma of the lung
- D

Ovarian cancer
- E

Retroperitoneal lymphoma

Explanation

Ascites can occur in gastric carcinoma. Patients usually present with anorexia, weight loss and abdominal pain. Medulloblastomas do not affect endocrine function or cause a significant increase in abdominal girth. Small-cell lung carcinoma can produce the syndrome of inappropriate antidiuretic hormone secretion but again is not usually associated with ascites. Retroperitoneal lymphoma rarely presents with ascites. More commonly, patients complain of fever, night sweats and abdominal pain. Ovarian cancer often presents with constipation, increasing abdominal girth due to ascites but with loss of fat and muscle mass elsewhere. Unfortunately patients often present with late-stage disease, and as such five-year survival is very poor.

7523

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Next Question

- Previous Question

Feedback
- Tag Question

End Session

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Session Progress

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Responses - % Correct:	0%

Back to Filters

Question 34 of 102

A 26-year-old woman is found to have ‘moderate dyskaryosis’ on a routine cervical smear examination.

What should be recommended as follow-up of this result?

- A

Repeat smear to confirm result
- B

Repeat smear in 4-6 months
- C

Colposcopy
- D

Cone biopsy
- E

Reassure and review in 3 years

7524

Submit

Previous Question

Skip Question

Calculator

Normal Values

Back to Filters

Question 34 of 102

A 26-year-old woman is found to have ‘moderate dyskaryosis’ on a routine cervical smear examination.

What should be recommended as follow-up of this result?

A	Repeat smear to confirm result
B	Repeat smear in 4-6 months
C	Colposcopy
D	Cone biopsy
E	Reassure and review in 3 years

Explanation

Under the present UK Department of Health guidelines, women are sent their first invitation for routine screening at the age of 25 years. They are then invited for screening every three years until the age of 49 years. From the age of 50 to 64 they are invited for screening every five years. Women who have had treatment for abnormal cells on the cervix may need to have a screening test more often. After the age of 65 years women do not need to have cervical screening unless they have had recent cervical changes, or for some reason they have not had a screening test since the age of 50 years.

Dyskaryosis or dysplasia refers to the precancerous change in cells. There are four types:

- borderline
- mild
- moderate
- severe

A smear result may also refer to CIN (cervical intraepithelial neoplasia) 1, CIN 2, or CIN 3 instead of mild, moderate or severe. This classification is not strictly accurate as CIN can only really be diagnosed with a biopsy and relate to the thickness of the skin covering the cervix that is affected.

If the result shows mild cell changes or CIN 1 then a repeat smear is usually performed in 6 months. Sometimes these slightly abnormal cells can go back to normal by themselves. If the next smear is abnormal, then referral is made for colposcopy. The NHS guidelines say that you should have three negative 6-monthly smears, one after the other, before it is safe for you to go back to regular screening.

Women with smears showing moderate or severe precancerous changes will be referred for colposcopy as they have a significant risk of proceeding to cervical cancer if left untreated.

7524

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Next Question

Previous Question	Tag Question
Feedback	End Session

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Back to Filters

Question 35 of 102

A 65-year-old female has recently been diagnosed with invasive ductal carcinoma of the right breast. At operation one of ten lymph nodes were found to be involved. The rest of her metastatic screen was negative. A decision is made to treat with tamoxifen for 5 years.

Which of the following side-effects is most recognised as a complication of long-term tamoxifen treatment?



- | | |
|---|--|
| A | It usually causes osteoporosis |
| B | It may increase her risk of heart disease |
| C | It may cause blood clots |
| D | It may reduce the risk of endometrial cancer |
| E | It often causes weight loss |

7525

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Back to Filters

Question 35 of 102

A 65-year-old female has recently been diagnosed with invasive ductal carcinoma of the right breast. At operation one of ten lymph nodes were found to be involved. The rest of her metastatic screen was negative. A decision is made to treat with tamoxifen for 5 years.

Which of the following side-effects is most recognised as a complication of long-term tamoxifen treatment?



A	It usually causes osteoporosis
B	It may increase her risk of heart disease
C	It may cause blood clots
D	It may reduce the risk of endometrial cancer
E	It often causes weight loss

Explanation

Tamoxifen is a partial estrogen agonist/antagonist. It confers a survival advantage of up to 4 years in postmenopausal women and so is given usually for 5 years after diagnosis.The weak estrogen-like properties account for a slight decrease in the level of cholesterol in postmenopausal women, increased bone density and an increased risk of uterine cancer. Patients are also more at risk of thromboembolic disease.

Other common side-effects of tamoxifen include:

- hot flushes
- indigestion or feeling sick
- sweats
- vaginal dryness
- vaginal discharge
- weight gain (often caused by retaining fluid in the body).

Given the side-effect profile of tamoxifen, alternatives are being considered for use in early and advanced breast cancer. Third-generation aromatase inhibitors, letrozole, anastrozole, and exemestane, are currently being evaluated as adjuvant therapy of early breast cancer instead of tamoxifen. Three treatment strategies are under investigation: replacement of tamoxifen as adjuvant therapy for 5 years (early adjuvant therapy); sequencing of tamoxifen before or after an aromatase inhibitor during the first 5 years (early sequential adjuvant therapy); or following 5 years of tamoxifen (extended adjuvant therapy). Results of the first early adjuvant trial (Arimidex((R)), Tamoxifen Alone or in Combination (ATAC) demonstrated that anastrozole was significantly more effective than tamoxifen in reducing the risk of disease recurrence. A number of trials further are ongoing.

7525

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Easy

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Session Progress

Responses Correct:	0
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Responses - % Correct:	0%

Back to Filters

Question 36 of 102

A 30-year-old gentleman presents with a 3-month history of diarrhoea. On examination he is found to have a blood pressure of 180/100 mmHg. A firm, enlarged thyroid is also noted.

Some blood results are shown below:

Haemoglobin (Hb)	11 g/dl
White cell count (WCC)	4.0 g/dl
Platelets	450 ×10 ⁹ /l
Na ⁺	135 mmol/l
K ⁺	3.5 mmol/l
Urea	5.5 mmol/l
Creatinine	80 mmol/l
Corrected calcium	2.72 mmol/l

What is a possible unifying diagnosis?

- A

Carcinoid syndrome
- B

Multiple endocrine neoplasia (MEN) 1
- C

MEN 2a
- D

Phaeochromocytoma
- E

Vasoactive intestinal peptide (VIP)oma

7526

Submit

Previous QuestionSkip Question

Calculator✔

Normal Values✔

Back to Filters

Question 36 of 102

A 30-year-old gentleman presents with a 3-month history of diarrhoea. On examination he is found to have a blood pressure of 180/100 mmHg. A firm, enlarged thyroid is also noted.

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Urea	5.5 mmol/l
Creatinine	80 mmol/l
Corrected calcium	2.72 mmol/l

What is a possible unifying diagnosis?



- A

Carcinoid syndrome
- B

Multiple endocrine neoplasia (MEN) 1
- C

MEN 2a
- D

Phaeochromocytoma
- E

Vasoactive intestinal peptide (VIP)oma

Explanation

MEN syndromes are categorised into MEN type 1 and MEN type 2.

MEN 1 affects the parathyroid glands, the pancreatic islets and the anterior pituitary. Associated tumours include lipomas, angiofibromas, or those located in the adrenal gland cortex.

MEN 2A is defined by medullary thyroid carcinoma (MTC), which causes diarrhoea, pheochromocytoma, which causes hypertension, and hyperparathyroidism caused by parathyroid gland hyperplasia, which causes hypercalcaemia.

MEN 2B is defined by medullary thyroid tumour and pheochromocytoma. Associated abnormalities include mucosal neuromas, medullated corneal nerve fibres, and marfanoid habitus.

Carcinoid tumours arise from the enterochromaffin cells in the intestine and the main bronchi. The tumours secrete peptides such as 5-hydroxytryptophan. The carcinoid syndrome is a manifestation of advanced disease and is characterised by facial flushing, diarrhoea and wheezing.

Phaeochromocytoma is an adrenal tumour known to secrete large amounts of catecholamines. It is associated with a variety of symptoms including headache, palpitations, sweating, and anxiety. Hypertension, which may be sustained or paroxysmal, is believed to be the most consistent clinical sign.

VIPomas in adults are neuroendocrine islet cell tumours of the pancreas that produce high amounts of vasoactive intestinal peptide (VIP). Other secreted hormones may include secreted gastrin and pancreatic polypeptide. Episodic diarrhoea is often the presenting symptom.

7526

Rate this question:

Next Question

- Previous Question

Feedback
- Tag Question

End Session

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Session Progress

Responses Correct:	0
Responses Incorrect:	36
Responses Total:	36
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Back to Filters

Question 37 of 102

A 50-year-old gentleman with newly diagnosed Duke C colorectal carcinoma received his first cycle of adjuvant 5-fluorouracil (bolus and infusion) and folinic acid (bolus) chemotherapy five days ago. He is brought into the emergency department with new onset florid diarrhoea and severe oral mucositis. He is clinically dehydrated and drowsy.

Which of the following is the most likely explanation for his presentation?

-
- A

The dose of 5-fluorouracil was too high
- B

The dose of folinic acid was too low
- C

Genetic susceptibility to toxicity from 5-fluorouracil due to a deficiency of the catabolising enzyme
- D

Genetic susceptibility to toxicity from 5 fluorouracil due to an excess of the anabolising enzyme
- E

Too rapid administration of 5 -fluorouracil bolus

7527

Submit

Previous QuestionSkip Question

Calculator✔

Normal Values✔

Question 37 of 102

Which of the following is the most likely explanation for his presentation?

A	The dose of 5-fluorouracil was too high
B	The dose of folinic acid was too low
C	Genetic susceptibility to toxicity from 5-fluorouracil due to a deficiency of the catabolising enzyme
D	Genetic susceptibility to toxicity from 5-fluorouracil due to an excess of the anabolising enzyme
E	Too rapid administration of 5-fluorouracil bolus

5-Fluorouracil (5-FU) is an antimetabolite with a broad spectrum of antineoplastic activity. Its most common toxicities are diarrhoea, mucositis and myelosuppression. Cardiac toxicities are observed in approximately 1% of patients. In combination with leucovorin (LV), 5-FU-based chemotherapy is the standard recommended regimen in patients with metastatic colorectal cancer.

5-FU is a fluorine-substituted analogue of uracil. It must be metabolically activated to 5-fluoro-2'-deoxyuridine-5-monophosphate (F-dUMP). Cytotoxicity is primarily due to the inhibition of DNA synthesis by FdUMP blocking thymidylate synthetase. This enzyme normally transfers a methylene group from reduced folic acid to deoxyuridylate monophosphate (dUMP) to form thymidylate, which is essential for DNA synthesis.

Dihydropyrimidine dehydrogenase (DPD) is the enzyme responsible for the breakdown of 5-FU. A pharmacogenetic disorder has been described concerning cancer patients with a complete or partial deficiency of DPD. In this they suffer from severe toxicity, including death, following the administration of 5-FU. It is similar to the picture seen with an overdose of 5FU and is recognised in approximately 3% of patients.

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Next Question

[Previous Question](#)

Tag Question

Feedback

End Session

Peer Responses %

Session Progress

Responses Correct:	0
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Back to Filters

Question 38 of 102

A 50-year-old gentleman, who has smoked heavily in the past, presents with a 6-month history of progressive generalised weakness and fatigue. He had particularly noted difficulty walking upstairs. He also complained of a dry mouth and lightheadedness on standing. Symptoms were variable throughout the day but typically worse in the evening. Examination revealed mild proximal weakness in the lower extremities with absent reflexes. Nerve conduction studies showed low-amplitude motor responses which normalised after a brief 10 s maximal isometric contraction, increasing two- to threefold in amplitude.

What is the likely diagnosis?

- A

Myaesthesia gravis
- B

Myotonic dystrophy
- C

Lambert-Eaton syndrome
- D

Polymyositis
- E

Subacute motor neuronopathy

7528

Submit

Previous Question

Skip Question

Calculator

Normal Values

Question 38 of 102

1

1

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1

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Back to Filters

Question 39 of 102

A 55-year-old lady with recurrent breast cancer presents with confusion, abdominal pain and constipation. A recent bone scan did not reveal any "hot spots".

Blood results show:

Na ⁺	135 mmol/l
K ⁺	3.4 mmol/l
Urea	10.0 mmol/l
Creatinine	120 mmol/l
Corrected calcium	3.5 mmol/l

What is the most likely cause of her presentation?

-
- A

Tumour production of 1,25-dihydroxy vitamin D
- B

Widespread bony metastatic disease
- C

Tumour production of parathyroid-related protein (PTH-RP)
- D

Tumour production of parathyroid hormone
- E

Defect in calcium-sensing receptor

7529

Submit

Previous Question

Skip Question

Calculator


Normal Values

Question 39 of 102

Blood results show:

Na ⁺	135 mmol/l
K ⁺	3.4 mmol/l
Urea	10.0 mmol/l
Creatinine	120 mmol/l
Corrected calcium	3.5 mmol/l

What is the most likely cause of her presentation?

- 

A	Tumour production of 1,25-dihydroxy vitamin D
B	Widespread bony metastatic disease
C	Tumour production of parathyroid-related protein (PTH-RP)
D	Tumour production of parathyroid hormone
E	Defect in calcium-sensing receptor

In solid tumours, hypercalcaemia is caused by parathyroid hormone-related protein (PTHrP), which is produced by the tumour. This acts on osteoclasts in bone to increase bone resorption and promote calcium release from bone. It also inhibits calcium excretion in the distal tubule of the kidney. Hypercalcaemia of malignancy is not thought to be a product of widespread bony metastases and bone destruction.

The calcium-sensing receptor (CaSR) is a G protein-coupled receptor, which allows the parathyroid chief cells, the thyrocytes, and the ascending limb of the loop of Henle (renal tubular epithelial cells) to respond to changes in the extracellular calcium concentration. Three uncommon human disorders are due to abnormalities of the CaSR gene, (1) familial benign hypocalciuric hypercalcemia; (2) neonatal severe hyperparathyroidism, and (3) autosomal dominant hypocalcemia with hypercalciuria.

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Next Question

[Previous Question](#)

Tag Question

Feedback

End Session

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Session Progress

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Back to Filters

Question 40 of 102

A 35-year-old patient with locally advanced breast cancer presents to the emergency department 2 days after her first dose of chemotherapy complaining of restlessness and facial twitching. Which drug is most likely to be responsible for her presentation?

- A

Epirubicin
- B

Dexamethasone
- C

Metoclopramide
- D

Granisetron
- E

Cyclophosphamide

7530

Submit

Previous Question

Skip Question

Calculator

Normal Values

Back to Filters

Question 40 of 102

A 35-year-old patient with locally advanced breast cancer presents to the emergency department 2 days after her first dose of chemotherapy complaining of restlessness and facial twitching.

Which drug is most likely to be responsible for her presentation?

A	Epirubicin
B	Dexamethasone
C	Metoclopramide
D	Granisetron
E	Cyclophosphamide

Explanation

Metoclopramide is a dopamine antagonist anti-emetic that acts on the chemoreceptor trigger zone. It also increases resting pressure in the lower oesophageal sphincter and the gastric fundus, resulting in hastened oesophageal clearance, accelerated gastric emptying and shortened transit time through the small bowel.

In some patients, metoclopramide may produce sedation, drowsiness, galactorrhoea, menstrual disorders and extrapyramidal reactions. Extrapyramidal symptoms are more frequent at higher than recommended doses, but occur with therapeutic doses, particularly in children, young women and in patients with impaired renal or hepatic function.

Domperidone is a dopamine antagonist with anti-emetic properties similar to those of metoclopramide. It does not readily cross the blood-brain barrier however, and so seldom causes extrapyramidal side-effects. Its antiemetic effect may be due to a combination of peripheral (gastrokinetic) effects and antagonism of central dopamine receptors in the chemoreceptor trigger zone in the area outside the blood-brain barrier. Other alternative antiemetics include cyclizine and the 5HT3 antagonists, such as granisetron or ondansetron.

7530

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Easy

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Session Progress

Responses Correct:	0
Responses Incorrect:	40
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Back to Filters

Question 41 of 102

A 50-year-old patient with newly diagnosed colorectal cancer has a severe peripheral neuropathy secondary to poorly controlled diabetes.

Which drug should be avoided when planning treatment?



- | | |
|---|----------------|
| A | 5-Fluorouracil |
| B | Irinotecan |
| C | Capecitabine |
| D | Cetuximab |
| E | Oxaliplatin |

7531

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Back to Filters

Question 41 of 102

A 50-year-old patient with newly diagnosed colorectal cancer has a severe peripheral neuropathy secondary to poorly controlled diabetes.

Which drug should be avoided when planning treatment?

A	5-Fluorouracil
B	Irinotecan
C	Capecitabine
D	Cetuximab
E	Oxaliplatin

Explanation

Chemotherapy and other drug treatments for cancer are a common cause of peripheral neuropathy, and certain drugs should be avoided in patients with known nerve damage.

Some of the commonly used anticancer drugs that can cause a peripheral neuropathy include:

- carboplatin
- cisplatin
- docetaxel
- high-dose paclitaxel
- oxaliplatin
- thalidomide
- vinblastine
- vincristine
- vinorelbine

7531

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty! Difficult

Peer Responses %

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Back to Filters

Question 42 of 102

A 70-year-old man complained of vague left flank pain without any evidence of diarrhoea, nausea, vomiting, or weight loss. He was aware of intermittent sweats, particularly at night, that improved with eating. An ultrasound of his abdomen was technically difficult. Computerised tomography (CT) scan of the abdomen revealed a 3 cm mass in the tail of the pancreas. Blood biochemistry was normal. A fasting blood glucose at 48 h was 2 mmol/l. A CT-guided needle biopsy of the pancreas revealed ill-defined nests of cells separated by vascularised stroma, which stained strongly positive for chromogranin and synaptophysin.

What is the diagnosis?

- A

Vasoactive intestinal peptide (VIP)oma
- B

Gastrinoma
- C

Somatostatinoma
- D

Insulinoma
- E

Glucagonoma

7533

Submit

Previous QuestionSkip Question

Calculator✔

Normal Values✔

Back to Filters

Question 42 of 102

A 70-year-old man complained of vague left flank pain without any evidence of diarrhoea, nausea, vomiting, or weight loss. He was aware of intermittent sweats, particularly at night, that improved with eating. An ultrasound of his abdomen was technically difficult. Computerised tomography (CT) scan of the abdomen revealed a 3 cm mass in the tail of the pancreas. Blood biochemistry was normal. A fasting blood glucose at 48 h was 2 mmol/l. A CT-guided needle biopsy of the pancreas revealed ill-defined nests of cells separated by vascularised stroma, which stained strongly positive for chromogranin and synaptophysin.

What is the diagnosis?



A	Vasoactive intestinal peptide (VIP)oma
B	Gastrinoma
C	Somatostatinoma
D	Insulinoma
E	Glucagonoma

Explanation

The endocrine component of the pancreas is comprised of four types of hormone-producing islet cells: glucagon (A cells), insulin (B cells), somatostatin (D cells), and pancreatic polypeptide. Insulinomas are the most common pancreatic endocrine tumour. The incidence is about 1 case per 250 000. Approximately 50% of islet cell tumours are insulinomas. Glucagonomas, somatostatinomas, and pancreatic polypeptide-secreting tumours together comprise an additional 5–10% of islet cell tumors. Approximately 40% of pancreatic endocrine tumors (PETs) express hormones that are not native to the human pancreatic, i.e. gastrin and vasoactive intestinal peptide (VIP). In the present case, the tumour was an insulinoma. The patient experienced low fasting glucose levels on several occasions. Chromogranin ‘A’ and synaptophysin are proteins expressed by normal and neoplastic neuroendocrine cells and are useful markers of neuroendocrine differentiation of neoplasms. Patients with insulinomas may present with neurological or psychiatric disturbances. An important feature is that symptoms tend to occur at night or early in the morning. The diagnosis is made by demonstrating inappropriately high concentrations of both insulin and C-peptide in the blood, and a blood glucose level of less than 2–2.2 mmol/l together with the clinical picture of a hypoglycaemic episode (confusion, altered consciousness, visual disturbances, weakness, sweating, tremulousness, and less commonly, seizures). Provocative testing with a 48-h fast can be done in a hospital setting. Frequent measurements of the blood glucose concentration should be made during the fast. Only when a low value is recorded should a sample be taken to provide serum for insulin and C-peptide assay. Patients with a somatostinoma present with diabetes mellitus, cholelithiasis, diarrhoea, steatorrhoea, hypochlorhydria, anaemia, and weight loss. Mild glucose intolerance, a characteristic rash called necrolytic erythema migrans, psychiatric disturbances, anaemia, and thromboembolic disease with venous thrombosis or pulmonary emboli are the salient clinical features in patients with a glucagonoma. Patients with pancreatic polypeptidoma have been reported as having watery diarrhoea, chronic duodenal ulcers and multiple endocrine tumours. The major presenting abnormality of patients with a VIPoma is a large volume of secretory diarrhoea.

7533

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Next Question

Previous Question	Tag Question
Feedback	End Session

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Responses Correct:	0
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Back to Filters

Question 43 of 102

A 55-year-old gentleman has recently been started on Gleevec (Imatinib mesylate) for chronic myelogenous leukaemia.

What does it specifically target?



- A

The ras gene
- B

The cell membrane
- C

All tumour cells
- D

The proteosome
- E

An abnormality identified as Bcr-abl

7534

Submit

Previous Question

Skip Question

Calculator

Normal Values

Back to Filters

Question 43 of 102

A 55-year-old gentleman has recently been started on Gleevec (Imatinib mesylate) for chronic myelogenous leukaemia.

What does it specifically target?

- A

The ras gene
- B

The cell membrane
- C

All tumour cells
- D

The proteosome
- E

An abnormality identified as Bcr-abl

Explanation

In chronic myelogenous leukaemia (CML), a chromosomal rearrangement in white blood cells fuses two genes together to create an oncogene. This produces a damaged tyrosine kinase receptor protein BCR-ABL that signals cells to grow and divide even when no growth factor is present. Ultimately this leads to an overproduction of immature white blood cells. Gleevec is a tyrosine kinase inhibitor. It binds to the damaged BCR-ABL receptors therefore inhibiting tumour growth.

Gastrointestinal stromal tumours (GISTs), have also demonstrated remarkable sensitivity to Imatinib. A key factor in the growth and survival of cancerous GIST cells is the uncontrolled activation of a signalling enzyme known as KIT, a receptor tyrosine kinase, which becomes locked in an activated state. The abnormal signalling from the overactive KIT enzyme causes GIST cells to survive and proliferate uncontrollably. Gleevec inhibits the kinase enzyme activity of KIT and has been proven in several clinical trials to be effective.

7534

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Next Question

Previous Question

Feedback

Tag Question

End Session

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Session Progress	
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Responses - % Correct:	0%

Back to Filters

Question 44 of 102

A 55-year-old male smoker presents with a one month history of progressive dysphagia to solids and weight loss. He admits to long term reflux for which he takes anti-acid tablets from the chemist. Endoscopy shows a large polypoid, obstructing mass in the lower third of the oesophagus.

What is the likely histology?



- | | |
|---|-------------------------------------|
| A | Squamous carcinoma |
| B | Adenocarcinoma |
| C | Leiomyoma |
| D | Metastatic nodule from another site |
| E | Small cell carcinoma |

7535

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Question 44 of 102

A	Squamous carcinoma
B	Adenocarcinoma
C	Leiomyoma
D	Metastatic nodule from another site
E	Small cell carcinoma

Explanation

About half the oesophageal cancers diagnosed are squamous cell carcinomas. This type of cancer is found mainly in the upper third and middle of the oesophagus. The number of adenocarcinomas has increased in the last 20 years. They now make up half of all oesophageal cancers diagnosed. Adenocarcinomas are found mainly in the lower third of the oesophagus. This is the type of cancer that is most associated with acid reflux and Barrett's oesophagus.

The prognosis for oesophageal carcinoma varies depending on the stage at presentation, but is generally poor. The overall 5-year survival rate for resectable tumours ranges from 10-25%. The prognosis for more advanced tumours is much worse.

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Next Question

[Previous Question](#)

Tag Question

Feedback

End Session

Difficulty: Easy

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Session Progress

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Responses Incorrect:	44
Responses Total:	44
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Back to Filters

Question 45 of 102

A 55-year-old builder presents with a 3-week history of progressive shortness of breath, dry cough and right pleuritic chest pain. A chest X-ray shows bilateral pleural plaques, a right-sided pleural effusion and associated irregular thickening of the pleura. Pleural biopsies confirmed a diagnosis of mesothelioma.

Besides asbestos exposure, what other factor is thought to contribute most significantly to the aetiology of malignant mesothelioma?



- | | |
|---|---|
| A | Significant previous radiation exposure |
| B | Family history |
| C | Cigarette smoking |
| D | Previous lung operations |
| E | Exposure to fibreglass |

7536

Submit

Previous Question

Skip Question

Calculator

Normal Values

Question 45 of 102

Besides asbestos exposure, what other factor is thought to contribute most significantly to the aetiology of malignant mesothelioma?



Explanation

Rate this question:      

Next Question

[Previous Question](#)

Tag Question

Feedback

End Session

Peer Responses %

Session Progress

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Back to Filters

Question 46 of 102

A 69-year-old patient is being investigated for breathlessness, cough and severe weight loss. On the medical ward round, their CXR is reviewed and this shows hilar lymphadenopathy and multiple peripheral lung metastases.

Which of the following tumours is LEAST likely to be the underlying cause of the appearance in the lung?



- | | |
|---|------------|
| A | Breast |
| B | Colorectal |
| C | Testis |
| D | Brain |
| E | Bladder |

7635

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Back to Filters

Question 46 of 102

A 69-year-old patient is being investigated for breathlessness, cough and severe weight loss. On the medical ward round, their CXR is reviewed and this shows hilar lymphadenopathy and multiple peripheral lung metastases.

Which of the following tumours is LEAST likely to be the underlying cause of the appearance in the lung?

A	Breast
B	Colorectal
C	Testis
D	Brain
E	Bladder

Explanation

All the tumours listed above can metastasize to the lung and hence produce the typical CXR picture consisting of hilar lymphadenopathy with either diffuse multinodular shadows resembling miliary disease or multiple large well defined masses(‘canon balls’). Occasionally, cavitation or calcification may also be seen. However, most primary brain tumours do not metastasize. Some brain tumours derived from neural elements do metastasize but in these cases intraparenchymal metastases generally precedes distant haematogenous spread.

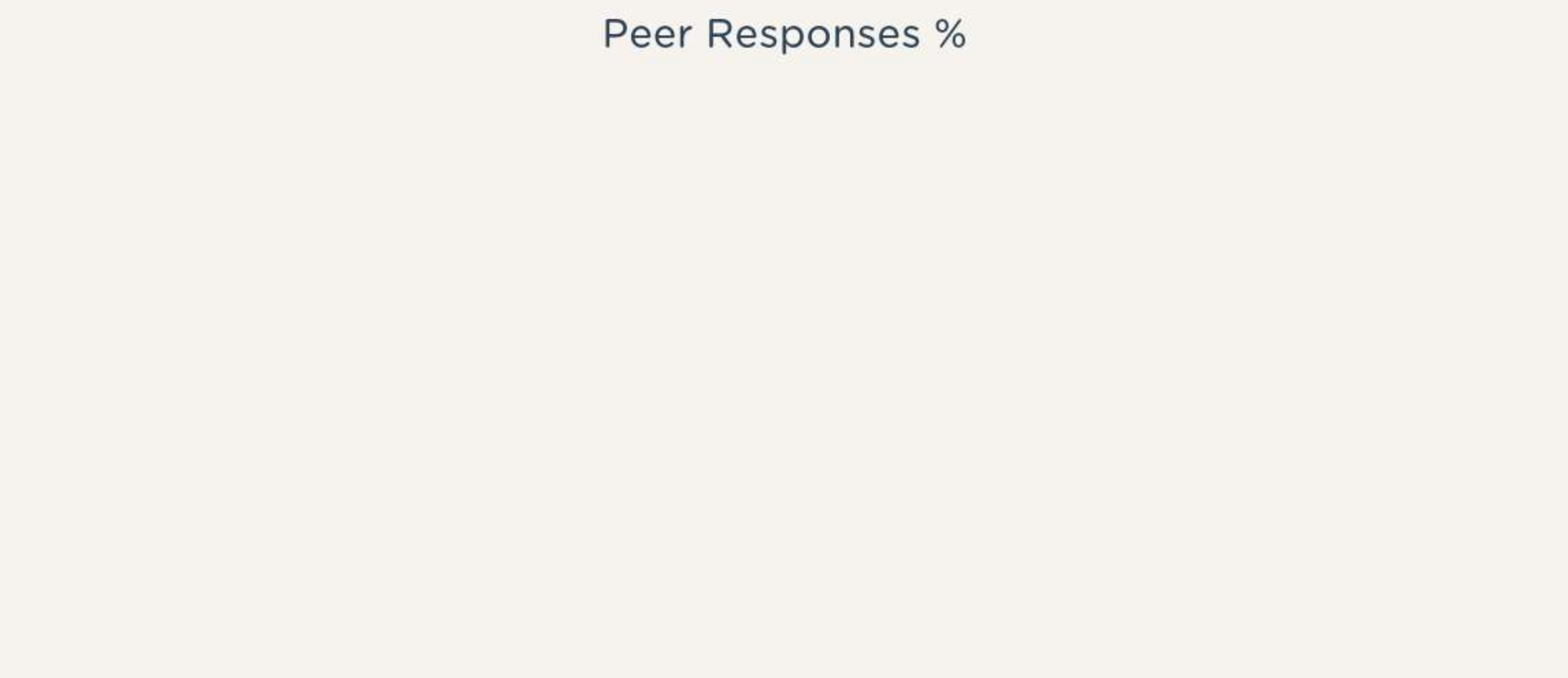
7635

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Average



Session Progress	
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Responses Incorrect:	46
Responses Total:	46
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Back to Filters

Question 47 of 102

A 76-year-old man presents with lethargy and pain affecting the lower back and left femur in particular. He is awaiting investigations for anaemia and an upper GI endoscopy is planned.

Investigations reveal:

Hb	9.1 g/dl
Viscosity	2.4
Creatinine	215 μ mol/l
Faecal occult bloods	negative
PSA	4
X-ray left femur	multiple osteolytic lesions



Which is the likeliest underlying diagnosis?

- A

Multiple myeloma
- B

Multiple metastases from unknown carcinoma
- C

Chronic myleloid leukaemia
- D

Occult GI malignancy
- E

Lymphoma

9278

Submit

Previous QuestionSkip Question

Calculator✔

Normal Values✔

Question 47 of 102

Investigations reveal:

Hb	9.1 g/dl
Viscosity	2.4
Creatinine	215 μ mol/l
Faecal occult bloods	negative
PSA	4
X-ray left femur	multiple osteolytic lesions

Which is the likeliest underlying diagnosis?

- | | |
|---|--|
| A | Multiple myeloma |
| B | Multiple metastases from unknown carcinoma |
| C | Chronic myeloid leukaemia |
| D | Occult GI malignancy |
| E | Lymphoma |

Explanation

Age-adjusted annual incidence is around 4/100,000 in Caucasians, and this is doubled in black populations. Incidence increases with age. Bone pain is the commonest presenting symptom, present in 70% of patients at time of diagnosis. 93% of patients with myeloma have more than one bony site involved. Other presentations may be with complications as a result of hyperviscosity, bleeding due to thrombocytopenia or increased susceptibility to infections such as pneumococcus, haemophilus or herpes zoster. Radiotherapy is extremely effective for bony lesions and is the mainstay of treatment in conjunction with corticosteroids for lesions leading to spinal cord compression. Commonly used therapeutic agents include melphalan and oral corticosteroids.

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[Previous Question](#)

Tag Question

Feedback

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Difficulty: Easy

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Session Progress

Responses Correct:	0
Responses Incorrect:	47
Responses Total:	47
Responses - % Correct:	0%

Back to Filters

Question 48 of 102

A 30-year-old woman presents with a 2-month history of general malaise, joint pains and bruising. On examination she is pale with some petechiae and quite marked bruising; there are no other obvious abnormalities.

Investigations:

Hb	10.4 g/dl (normocytic)
Plts	60 × 10 ⁹ /l
WCC	11 × 10 ⁹ /l
ESR	55 mm/h
Autoimmune profile (AIP)	-

Which of the following is the most likely diagnosis?

- A

Idiopathic thrombocytopenic purpura
- B

Systemic lupus erythematosus
- C

Felty’s syndrome
- D

Rheumatoid arthritis
- E

Infectious mononucleosis

9279

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Previous Question

Skip Question

Calculator

Normal Values

Back to Filters

Question 48 of 102

A 30-year-old woman presents with a 2-month history of general malaise, joint pains and bruising. On examination she is pale with some petechiae and quite marked bruising; there are no other obvious abnormalities.

Investigations:

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Plts	60 × 10 ⁹ /l
WCC	11 × 10 ⁹ /l
ESR	55 mm/h
Autoimmune profile (AIP)	-

Which of the following is the most likely diagnosis?

- A Idiopathic thrombocytopenic purpura
- B Systemic lupus erythematosus
- C Felty’s syndrome
- D Rheumatoid arthritis
- E Infectious mononucleosis

Explanation



- A Idiopathic thrombocytopenic purpura

In adults, ITP generally presents gradually and is associated is spontaneous bruising, petechiae and thrombocytopenia. ITP is more common in women (2.6:1) and in adults tends to present between ages 20–50. The cause is IgG anti-platelet antibodies, which are not tested as part of a standard autoimmune profile, hence the negative result shown above. Management involves the use of oral corticosteroids, with splenectomy an option for patients who fail to respond to medical therapy. Chronic GI blood loss is the likely cause for the haemoglobin seen here.

- B Systemic lupus erythematosus

ITP is more likely given the negative autoimmune profile, and is unlikely to cause bruising. SLE can cause an anaemia of chronic disease, haemolytic anaemia or thrombocytopenia, but the autoimmune profile is likely to be positive (in particular anti-dsDNA, antinuclear, antiphospholipid or anti-Sm positive).

- C Felty’s syndrome

One would expect a positive rheumatoid factor or anti-CCP screen within the autoimmune profile. Furthermore, whilst Felty syndrome can cause a pancytopenia, it generally follows several years of active, destructive rheumatoid disease rather than the relatively short 2-month history within the case vignette.

- D Rheumatoid arthritis

This is less likely given the presentation of bruising and petechiae; the negative autoimmune profile also points against rheumatoid arthritis.

- E Infectious mononucleosis

Whilst infectious mononucleosis is associated with a history of arthralgia, general malaise as well as thrombocytopenia and raised ESR, it remains an unlikely cause for this patient’s presentation. The history of bruising and the presence of anaemia and petechiae all point to an alternate diagnosis. Anaemia is rarely seen with infectious mononucleosis and in fact its presence warrants further investigation.

9279

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Average

Peer Responses %

Session Progress

Responses Correct:	0
Responses Incorrect:	48
Responses Total:	48
Responses - % Correct:	0%

Back to Filters

Question 49 of 102

A 59-year-old man presents with epigastric pain radiating to his back. He is diagnosed with pancreatic carcinoma and receives an aggressive regime of chemotherapy.

Which of the following, when measured serially, may be indicative of recurrence or progressive disease?

- | | |
|---|--------------|
| A | CA-125 |
| B | CA19-9 |
| C | CA15-3 |
| D | CEA |
| E | β -HCG |

18527

Submit

Previous QuestionSkip Question

Calculator✔

Normal Values✔

Back to Filters

Question 49 of 102

A 59-year-old man presents with epigastric pain radiating to his back. He is diagnosed with pancreatic carcinoma and receives an aggressive regime of chemotherapy.

Which of the following, when measured serially, may be indicative of recurrence or progressive disease?

- A

CA-125
- B

CA19-9
- C

CA15-3
- D

CEA
- E

β -HCG

Explanation

- B

CA19-9

CA-19-9 is a tumour marker which is raised in cases of gastrointestinal or pancreatic cancer. It may also be raised in cases of inflammatory bowel disease, pancreatitis or gallstones. CA-19-9 is not recommended by the American Society of Clinical Oncology (ASCO) as a diagnostic tool for pancreatic carcinoma or as a sole measure of disease recurrence, but serial testing as a measure of treatment response (in conjunction with other tests) may be useful.

- A

CA-125

CA-125 is a marker of ovarian carcinoma, but can occasionally also be raised in breast, uterine or gastrointestinal tumours.

- C

CA15-3

CA15-3 is a tumour marker suggestive of breast cancer.

- D

CEA

A raised serum CEA can occur with colorectal malignancies (but can also be elevated in non-small cell lung cancer and breast cancer).

- E

β -HCG

β -HCG is a marker for testicular and trophoblastic tumours, and alongside serum alpha-fetoprotein and lactate dehydrogenase, is a validated prognostic marker for germ cell tumours.

18527

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Previous Question	Tag Question
Feedback	End Session

Difficulty: Average

Peer Responses %

Session Progress

Responses Correct:	0
Responses Incorrect:	49
Responses Total:	49
Responses - % Correct:	0%

Back to Filters

Question 50 of 102

A 55-year-old lawyer presents to the haemato-oncology unit, having been recently diagnosed with chronic lymphocytic leukaemia (CLL) after recurrent herpes simplex infection, two episodes of pneumonia and lymphadenopathy, accompanied by a white count of $62 \times 10^9/l$, with an overwhelming lymphocytosis. You note that from the consultant notes he is to be started on fludarabine.

What must the patient be started on prior to treatment commencing?

- | | |
|---|-------------------------|
| A | IV immunoglobulin |
| B | Cefuroxime |
| C | Tazocin |
| D | Tazocin plus gentamicin |
| E | Co-trimoxazole |

20528

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Question 50 of 102

What must the patient be started on prior to treatment commencing?



- | | |
|---|-------------------------|
| A | IV immunoglobulin |
| B | Cefuroxime |
| C | Tazocin |
| D | Tazocin plus gentamicin |
| E | Co-trimoxazole |

- | | |
|---|----------------|
| E | Co-trimoxazole |
|---|----------------|

As with a number of other chemotherapeutic agents, fludarabine causes pancytopenia, and as a result leucopenia places CLL patients at increased risk of *Pneumocystis jiroveci* pneumonia. As a result, patients usually commence co-trimoxazole prophylaxis or receive nebulised pentamidine monthly whilst on treatment with fludarabine.

- | | |
|---|-------------------|
| A | IV immunoglobulin |
|---|-------------------|

IV immunoglobulin has no evidence in PCP prophylaxis.

- | | |
|---|------------|
| B | Cefuroxime |
|---|------------|

Cefuroxime may be used in the treatment of neutropenic sepsis, usually in penicillin allergic patients (local guidelines may vary). It has no role in PCP prophylaxis.

- | | |
|---|---------|
| C | Tazocin |
|---|---------|

Tazocin is the initial empiric antibiotic therapy recommended by **NICE** to patients with suspected neutropenic sepsis unless there are patient-specific or local guidelines recommending a different antibiotic. It is not used either in the treatment or provision of prophylaxis against PCP.

- | | |
|---|-------------------------|
| D | Tazocin plus gentamicin |
|---|-------------------------|

Tazocin plus gentamicin may be used in the treatment of neutropenic sepsis but has no role in prophylaxis against PCP.

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[Next Question](#)

[Previous Question](#)

Tag Question

Feedback

End Session

Difficulty: Very Easy

Peer Responses %

Session Progress

Responses Correct:	0
Responses Incorrect:	50
Responses Total:	50
Responses - % Correct:	0%

Back to Filters

Question 51 of 102

Two sisters from a Scandinavian family, aged 19 and 22 years of age, present to the cancer genetics clinic for a consultation. They are very worried as three close female relatives have suffered from breast cancer in their 30s, and 6 out of 10 people making up their aunts and cousins have suffered from malignant melanomas.

Which one of the following gene mutations or proteins may be responsible?

- A

TGFBR-1 (transforming growth factor beta receptor-1)
- B

P53
- C

APC
- D

HER-2
- E

CDKN2A

20537

Submit

Previous Question

Skip Question

Calculator

Normal Values

Back to Filters

Question 51 of 102

Two sisters from a Scandinavian family, aged 19 and 22 years of age, present to the cancer genetics clinic for a consultation. They are very worried as three close female relatives have suffered from breast cancer in their 30s, and 6 out of 10 people making up their aunts and cousins have suffered from malignant melanomas.

Which one of the following gene mutations or proteins may be responsible?

- A

TGFBR-1 (transforming growth factor beta receptor-1)
- B

P53
- C

APC
- D

HER-2
- E

CDKN2A

Explanation ⚙️

- E

CDKN2A

CDKN2A (also known as cyclin-dependent kinase inhibitor 2) is associated with familial clusters of malignant melanoma and breast cancer. In Europeans with this mutation (characteristic of familial atypical multiple mole melanoma (FAMMM)), around 60% develop malignant melanoma by age 80.

- A

TGFBR-1 (transforming growth factor beta receptor-1)

TGFBR-1 is not associated with malignancy.

- B

P53

This gene mutation is not associated with a strong family history of malignant melanoma. It is a tumour-suppressor gene associated with cervical, breast, lung and colon cancers.

- C

APC

This is a tumour suppressor gene. Mutations in APC lead to colon cancer – familial adenomatous polyposis is the familial syndrome associated with this gene mutation.

- D

HER-2

This is a proto-oncogene that is associated with aggressive HER-2-positive breast cancer in approximately 15–30% of all breast cancer cases. It is not associated with melanoma.

20537

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty! Difficult

Peer Responses %

Session Progress

Responses Correct:	0
Responses Incorrect:	51
Responses Total:	51
Responses - % Correct:	0%

Back to Filters

Question 52 of 102

A 73-year-old man who takes finasteride for symptoms of prostatism presents to his GP complaining of pain in his right femur, left humerus and back. He has a past history of hypertension for which he takes amlodipine, but nil else of note.

Investigations:

Hb	10.3 g/dl
WCC	4.5 x10 ⁹ /l
PLT	199 x10 ⁹ /l
Na ⁺	139 mmol/l
K ⁺	4.9 mmol/l
Cr	187 μmol/l
Ca	3.05 mmol/l
Bone scan	multiple hot spots, including in the areas identified as painful
CXR	normal

Which of the following is the most likely diagnosis?

- A

Multiple myeloma
- B

Bony metastases
- C

Hyperparathyroidism
- D

Hypercalcaemic hypocalciuria
- E

Paget’s disease

20601

Submit

Previous Question

Skip Question

Calculator

Normal Values

Question 52 of 102

Investigations:

Hb	10.3 g/dl
WCC	4.5 x10 ⁹ /l
PLT	199 x10 ⁹ /l
Na ⁺	139 mmol/l
K ⁺	4.9 mmol/l
Cr	187 μmol/l
Ca	3.05 mmol/l
Bone scan	multiple hot spots, including in the areas identified as painful
CXR	normal

Which of the following is the most likely diagnosis?

- | | |
|---|------------------------------|
| A | Multiple myeloma |
| B | Bony metastases |
| C | Hyperparathyroidism |
| D | Hypercalcaemic hypocalciuria |
| E | Paget's disease |

Explanation



- | | |
|---|-----------------|
| B | Bony metastases |
|---|-----------------|

A Multiple myeloma

- It is incorrect as a result of the abnormal bone scan. This is not a standard investigation in multiple myeloma, as the sensitivity of detecting lesions is actually less than that of a plain film skeletal

survey. Bone scans can be normal in multiple myeloma and large lesions can be hot or cold.

- | | |
|---|---------------------|
| C | Hyperparathyroidism |
|---|---------------------|

Whilst hyperparathyroidism may be associated with renal failure (and therefore anaemia) and hypercalcaemia, renal osteodystrophy is the more common complication of secondary and tertiary hyperparathyroidism – this typically results in telescopic shortening of the phalanges rather than long bone pain.

- D Hypercalcaemic hypocalciuria

Hypercalcaemic hypocalciuria is a benign, inherited condition associated with hypercalcaemia which is usually incidentally diagnosed. The patient is usually asymptomatic and the condition is not usually associated with either anaemia or renal impairment

- | | |
|---|-----------------|
| E | Paget's disease |
|---|-----------------|

Hypercalcaemia is not a feature of Paget's disease and therefore

Country	Year	Population	Population	Population	Population
		(1990)	(2000)	(2010)	(2015)
Algeria	1990	10,000,000	10,000,000	10,000,000	10,000,000
Algeria	2000	10,000,000	10,000,000	10,000,000	10,000,000
Algeria	2010	10,000,000	10,000,000	10,000,000	10,000,000
Algeria	2015	10,000,000	10,000,000	10,000,000	10,000,000

Feedback

End Session

Difficulty: Average

Peer Responses %

Session Progress

Responses Correct:	0
Responses Incorrect:	52
Responses Total:	52
Responses - % Correct:	0%

Question 53 of 102

Unfortunately her relatives misunderstood the advice of the palliative care nurse and applied a second patch after 24 h. Her relatives called an ambulance as she appeared to have deteriorated rapidly. On examination in the Emergency Department she is unrousable with pinpoint pupils and a respiratory rate of 15 breaths/min. Her blood pressure is 110/60 mmHg, pulse 66/min and O₂ saturation on air is 95%.



- | | |
|---|---|
| A | Infusion of naloxone |
| B | Switch to fentanyl 72-hourly |
| C | Remove the patch, support her with an airway, and titrate oral morphine as required |
| D | Consider intubation |
| E | Switch to s/c diamorphine |

Submit

Skip Question

Question 53 of 102

Unfortunately her relatives misunderstood the advice of the palliative care nurse and applied a second patch after 24 h. Her relatives called an ambulance as she appeared to have deteriorated rapidly. On examination in the Emergency Department she is unrousable with pinpoint pupils and a respiratory rate of 15 breaths/min. Her blood pressure is 110/60 mmHg, pulse 66/min and O₂ saturation on air is 95%.



A	Infusion of naloxone
B	Switch to fentanyl 72-hourly
C	Remove the patch, support her with an airway, and titrate oral morphine as required
D	Consider intubation
E	Switch to s/c diamorphine

C	Remove the patch, support her with an airway, and titrate oral morphine as required
---	---

This patient is not responding to palliative chemotherapy for her advanced metastatic pancreatic cancer, as evidenced by increasing pain and worsening liver function tests. Thus, symptom relief must be a priority. The patient is exhibiting signs of opioid toxicity as evidenced by difficult in rousing her and pinpoint pupils following the incorrect dosing by the family, and the move by her GP to a fentanyl patch prior to stability with her morphine dosing. However, her respiratory rate and saturations remain reasonable. Thus, it would be most reasonable to remove the patch, support her airway and provide any analgesia (including morphine – titrated against pain) as required.

A Infusion of naloxone

This would be likely to cause significant distress because of arousal, confusion and the return of pain.

B Switch to fentanyl 72-hourly

It would not help as both the patches are 72-hourly patches and it is important that the patches are only changed every 3 days.

D	Consider intubation
---	---------------------

It would be inappropriate given that simple supportive measures are much more appropriate as next steps.

E	Switch to s/c diamorphine
---	---------------------------

It will not deal with the morphine toxicity aspects of the scenario and thus is not the best option.

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[Previous Question](#)

[Tag Question](#)

[Feedback](#)

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Difficulty: Average

Peer Responses %

Session Progress

Responses Correct:	0
Responses Incorrect:	53
Responses Total:	53
Responses - % Correct:	0%

Question 54 of 102

Investigations;

Hb	11.5 g/dl
WCC	54.1 x10 ⁹ /l (CD20, CD5 positive lymphocytes)
PLT	160 x10 ⁹ /l
Na ⁺	139 mmol/l
K ⁺	5.3 mmol/l
Creatinine	130 μmol/l
Immunoglobulins	reduced

her

- | | |
|---|----------------------------------|
| A | Arrange for periodic review |
| B | Start immunoglobulin replacement |
| C | Start fludarabine |
| D | Start rituximab |
| E | Start iron sulphate replacement |

Submit

[Previous Question](#)

Skip Question

Calculator

Normal Values

Question 54 of 102

Investigations;

Hb	11.5 g/dl
WCC	54.1 x10 ⁹ /l (CD20, CD5 positive lymphocytes)
PLT	160 x10 ⁹ /l
Na ⁺	139 mmol/l
K ⁺	5.3 mmol/l
Creatinine	130 μmol/l
Immunoglobulins	reduced

her

- | | |
|---|----------------------------------|
| A | Arrange for periodic review |
| B | Start immunoglobulin replacement |
| C | Start fludarabine |
| D | Start rituximab |
| E | Start iron sulphate replacement |

Explanation

This woman has chronic lymphocytic leukaemia but is relatively asymptomatic at the current time. As such the recommendation is merely to arrange for periodic follow up. Indications to begin chemotherapy include particularly troublesome symptoms such as night sweats, fevers or rapid weight loss, progressive marrow failure as characterised by rapidly worsening anaemia or thrombocytopaenia, progressive lymphocytosis as characterised by a doubling time of less than 6 months, and symptomatic splenomegaly (presenting with severe pain or anorexia). Fludarabine based regimens form the back bone of chemotherapy for CLL, immunotherapy with monoclonals targeting white cell markers such as CD20 (rituximab), also form a valuable addition to treatment options for CLL.

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Next Question

[Previous Question](#)

Tag Question

Feedback

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Session Progress

Responses Correct:	0
Responses Incorrect:	54
Responses Total:	54
Responses - % Correct:	0%

Back to Filters

Question 55 of 102

A 54-year-old man is receiving cycles of 5-FU for right sided colon cancer. Abdominal CT did not indicate liver metastases and the liver looked normal at the time of hemicolectomy. He comes to clinic 3 weeks after his chemotherapy and feels relatively well, but his blood tests are shown below.

Hb	10.2 g/dl
WCC	2.9 × 10 ⁹ /l
PLT	72 × 10 ⁹ /l
Na ⁺	141 mmol/l
K ⁺	5.2 mmol/l
Creatinine	130 mol/l
PT	17.1 s
Fibrinogen	Raised
ALT	55 U/l



Which of the following is the most appropriate management plan?

- A

Arrange for him to receive GCSF
- B

Arrange a platelet transfusion
- C

Admit him for barrier nursing
- D

Ask him to return for repeat blood testing in a few days
- E

Arrange a 2 unit blood transfusion for him

21018

Submit

Previous QuestionSkip Question

Calculator✔

Normal Values✔

Question 55 of 102

Hb	10.2 g/dl
WCC	$2.9 \times 10^9/\text{l}$
PLT	$72 \times 10^9/\text{l}$
Na ⁺	141 mmol/l
K ⁺	5.2 mmol/l
Creatinine	130 μmol/l
PT	17.1 s
Fibrinogen	Raised
ALT	55 U/l

A	Arrange for him to receive GCSF
B	Arrange a platelet transfusion
C	Admit him for barrier nursing
D	Ask him to return for repeat blood testing in a few days
E	Arrange a 2 unit blood transfusion for him

A	Arrange for him to receive GCSF
---	---------------------------------

B Arrange a platelet transfusion

C Admit him for barrier nursing

- E Arrange a 2 unit blood transfusion for him

Rate this question:

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Peer Responses %

Responses Correct:	0
Responses Incorrect:	55
Responses Total:	55
Responses - % Correct:	0%

Back to Filters

Question 56 of 102

A 52-year-old man with known bronchial carcinoma and a solitary brain metastasis presents 11 days after cranial radiotherapy with excessive drowsiness, clumsiness, mental slowness and lethargy. On examination he looks thin and tired. His BP is 142/71 mmHg and there is no papilloedema. No focal neurology is identified.

Which of the following is the most likely cause?



- | | |
|---|--|
| A | Worsening anaemia |
| B | Further cerebral metastases |
| C | Post-cranial irradiation somnolence syndrome |
| D | Cerebral oedema |
| E | Post-irradiation hypercalcaemia |

21173

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Back to Filters

Question 56 of 102

A 52-year-old man with known bronchial carcinoma and a solitary brain metastasis presents 11 days after cranial radiotherapy with excessive drowsiness, clumsiness, mental slowness and lethargy. On examination he looks thin and tired. His BP is 142/71 mmHg and there is no papilloedema. No focal neurology is identified.

Which of the following is the most likely cause?



- A

Worsening anaemia
- B

Further cerebral metastases
- C

Post-cranial irradiation somnolence syndrome
- D

Cerebral oedema
- E

Post-irradiation hypercalcaemia

Explanation



- C

Post-cranial irradiation somnolence syndrome

Post-cranial irradiation somnolence syndrome is characterised by excessive somnolence, lethargy and clumsiness and tends to occur around 11-21 or 31-35 days after high-dose cranial radiotherapy. No focal cause is identified and it is postulated that the condition may occur due to post-irradiation demyelination. No specific therapy is required, but some case reports suggest that corticosteroids may be of use although the evidence is not firmly established.

- A

Worsening anaemia

The symptoms of drowsiness, clumsiness and mental slowness are not typically associated with anaemia. Cranial radiotherapy does not usually cause anaemia either.

- B

Further cerebral metastases

The clinical vignette reports no papilloedema or focal neurology, which would be expected in further cerebral metastases.

- D

Cerebral oedema

In cerebral oedema, the history reports no papilloedema and no focal neurology.

- E

Post-irradiation hypercalcaemia

Radiotherapy does not cause hypercalcaemia.

21173

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Average

Peer Responses %

Session Progress

Responses Correct:	0
Responses Incorrect:	56
Responses Total:	56
Responses - % Correct:	0%

Back to Filters

Question 57 of 102

A 32-year-old woman is admitted under the palliative care team with severe pain going down her left leg. She has advanced ovarian carcinoma and is only expected to live for a few weeks more. On examination she has constant pain in the left posterior thigh and calf radiating down to the great toe. She is currently taking paracetamol and morphine.

Investigations;

Hb	10.4 g/dl
WCC	9.1 x10 ⁹ /l
PLT	256 x10 ⁹ /l
Na ⁺	140 mmol/l
K ⁺	4.9 mmol/l
Creatinine	195 μmol/l
MRI	tumour invasion of the left foramen of S1

Which of the following is the most appropriate way to manage her pain?

- A

Increase her morphine
- B

Oral diclofenac
- C

Surgical decompression
- D

TENS
- E

S1 bupivacaine block

21216

Submit

Previous Question

Skip Question

Calculator

Normal Values

Back to Filters

Question 57 of 102

A 32-year-old woman is admitted under the palliative care team with severe pain going down her left leg. She has advanced ovarian carcinoma and is only expected to live for a few weeks more. On examination she has constant pain in the left posterior thigh and calf radiating down to the great toe. She is currently taking paracetamol and morphine.

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PLT	256 x10 ⁹ /l
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Which of the following is the most appropriate way to manage her pain?

- A

Increase her morphine
- B

Oral diclofenac
- C

Surgical decompression
- D

TENS
- E

S1 bupivacaine block

Explanation

Palliative care physicians have considerable success in relieving pain with bupivacaine infiltration of a single nerve root. Increasing her morphine is likely to increase her level of drowsiness and affect her functioning without necessarily completely relieving her pain. TENS is also likely to provide partial relief and can only be used intermittently. Given her very short term prognosis, surgical decompression would not be appropriate. For an S1 block a catheter is inserted under x-ray guidance towards the inferior lip of the S1 foramen and tunnelled subcutaneously to the hip, allowing easy access and reducing any chance of infection.

21216

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Next Question

Previous Question

Feedback

Tag Question

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Difficulty: Average

Peer Responses %

Session Progress

Responses Correct:	0
Responses Incorrect:	57
Responses Total:	57
Responses - % Correct:	0%

Back to Filters

Question 58 of 102

A 49-year-old woman presents to the clinic with PR bleeding and change in bowel habit. She has been feeling increasingly lethargic over the past few months. You understand that her father died of colonic carcinoma at the age of 58. She has no other significant history of note. On examination her BMI is 21, performance status is 1 and her BP is 142/70 mmHg. There are no abnormal external findings and her abdomen is soft and non-tender.

Investigations:

Hb	10.9 g/dl
WCC	8.1 x10 ⁹ /l
PLT	201 x10 ⁹ /l
ESR	45 mm/hr
Na ⁺	139 mmol/l
K ⁺	4.5 mmol/l
Creatinine	100 μmol/l
Flexible colonoscopy	sigmoid carcinoma
CT abdomen	annular sigmoid carcinoma with two liver metastases in the right lobe each 1cm in diameter

Which of the following is the most appropriate management?

- A

Surgical resection of the primary cancer and liver metastases + chemotherapy
- B

Surgical resection of the primary cancer and liver metastases
- C

Radical radiotherapy
- D

Radiofrequency ablation
- E

Combined chemo- and radical radiotherapy to the primary tumour

21217

Submit

Previous Question

Skip Question

Calculator

Normal Values

Question 58 of 102

Investigation:

Hb	10.9 g/dl
WCC	8.1 x10 ⁹ /l
PLT	201 x10 ⁹ /l
ESR	45 mm/hr
Na ⁺	139 mmol/l
K ⁺	4.5 mmol/l
Creatinine	100 μmol/l
Flexible colonoscopy	sigmoid carcinoma
CT abdomen	annular sigmoid carcinoma with two liver metastases in the right lobe each 1cm in diameter

A	Surgical resection of the primary cancer and liver metastases + chemotherapy
B	Surgical resection of the primary cancer and liver metastases
C	Radical radiotherapy
D	Radiofrequency ablation
E	Combined chemo- and radical radiotherapy to the primary tumour

A	Surgical resection of the primary cancer and liver metastases + chemotherapy
---	--

Given this woman's young age and lack of significant co-

B Surgical resection of the primary cancer and liver metastases

C	Radical radiotherapy
---	----------------------

D	Radiofrequency ablation
---	-------------------------

E Combined chemo- and radical radiotherapy to the primary tumour

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Tag Question

Feedback

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Similarity: Average

Post-response

Session Progress

Responses Incorrect:	58
Responses Total:	58
Responses - % Correct:	0%

Back to Filters

Question 59 of 102

A 67-year-old woman comes to the clinic complaining of weakness and lethargy with generalized bony aches and pains over the past few months. She saw the GP some 3 months earlier because of an episode of pneumococcal pneumonia. On examination she looks pale and tired. Her BP is 135/80 mmHg, pulse is 70/min and regular. There are no specific findings on cardiovascular, respiratory and abdominal examinations.

Investigations;

Hb	10.1 g/dl
WCC	9.9 x10 ⁹ /l
PLT	102 x10 ⁹ /l
Na ⁺	139 mmol/l
K ⁺	4.9 mmol/l
Creatinine	182 μmol/l
Albumin	23 g/l
Immunoglobulin electrophoresis	IgG paraprotein band
24hr urinary protein	3.2g
Bone marrow	30% plasma cells

Which of the following is the most useful test with respect to establishing prognosis?



- A

Hb
- B

Beta-2 microglobulin
- C

CRP
- D

Albumin
- E

Platelets

21223

Submit

Previous Question

Skip Question

Calculator

Normal Values

Back to Filters

Question 59 of 102

A 67-year-old woman comes to the clinic complaining of weakness and lethargy with generalized bony aches and pains over the past few months. She saw the GP some 3 months earlier because of an episode of pneumococcal pneumonia. On examination she looks pale and tired. Her BP is 135/80 mmHg, pulse is 70/min and regular. There are no specific findings on cardiovascular, respiratory and abdominal examinations.

Investigations;

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Immunoglobulin electrophoresis	IgG paraprotein band
24hr urinary protein	3.2g
Bone marrow	30% plasma cells

Which of the following is the most useful test with respect to establishing prognosis?

- A

Hb
- B

Beta-2 microglobulin
- C

CRP
- D

Albumin
- E

Platelets

Explanation

Beta-2 microglobulin is a very useful surrogate marker for the overall myeloma disease burden. Additionally, levels of beta-2 microglobulin are elevated in chronic renal failure; hence measurement provides a useful integrated measure of the degree of renal dysfunction and myeloma burden. CRP is an indirect measure of IL-6 and is another useful measure of disease activity. Hb, albumin and platelets may all be reduced in extensive disease, but they are less specific than beta-2 microglobulin as a marker of prognosis.

21223

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Next Question

Previous Question	Tag Question
Feedback	End Session

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Responses Incorrect:	59
Responses Total:	59
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Question 60 of 102

Investigations;

Hb	11.5 g/dl
WCC	7.9 x10 ⁹ /l
PLT	201 x10 ⁹ /l
Na ⁺	139 mmol/l
K ⁺	4.4 mmol/l
Creatinine	130 μmol/l

113

- | | |
|---|-----------------------|
| A | β -HCG |
| B | LDH |
| C | AFP |
| D | Testicular ultrasound |
| E | CT thorax |

Submit

Skip Question

Question 60 of 102

Investigations;

Hb	11.5 g/dl
WCC	7.9 x10 ⁹ /l
PLT	201 x10 ⁹ /l
Na ⁺	139 mmol/l
K ⁺	4.4 mmol/l
Creatinine	130 μ mol/l

Which of the following is the most appropriate next investigation?

A	β -HCG
B	LDH
C	AFP
D	Testicular ultrasound
E	CT thorax

Explanation

The Answer is - Testicular ultrasound

Cryptorchidism is associated with a greatly increased risk of seminoma (10-40 times), although surgery in many cases permits earlier detection of the tumour. Around 75% of patients present with localised disease, 15% regional lymph node involvement, and around 10% with distant metastases. β -HCG levels are only elevated in around 10% of patients with seminomas, although the level of elevation may correlate with metastases. AFP is primarily associated with yolk sac tumours, and LDH is non-specific for testicular tumours. Scrotal ultrasonography is therefore the investigation of choice, with typical appearances revealing a hypoechoic mass with areas of calcification.

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Next Question

[Previous Question](#)

Tag Question

Feedback

End Session

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Responses Incorrect:	60
Responses Total:	60
Responses - % Correct:	0%

Question 61 of 102

Investigations:

Hb	13.1 g/dl
WCC	8.4 x10 ⁹ /l
PLT	201 x10 ⁹ /l
Na ⁺	140 mmol/l
K ⁺	4.5 mmol/l
Creatinine	110 μmol/l
PSA	6 μg/l (<4)

3

- | | |
|---|----------------------------------|
| A | Prostatic carcinoma |
| B | Benign prostatic hypertrophy |
| C | Acute prostatitis |
| D | Chronic intermittent prostatitis |
| E | Non-specific urethritis |

Submit

[Previous Question](#)

Skip Question

Calculator

Normal Values

Question 61 of 102

Investigations:

Hb	13.1 g/dl
WCC	8.4 x10 ⁹ /l
PLT	201 x10 ⁹ /l
Na ⁺	140 mmol/l
K ⁺	4.5 mmol/l
Creatinine	110 μ mol/l
PSA	6 μ g/l (<4)

Which of the following is the most likely diagnosis?

- | | |
|---|----------------------------------|
| A | Prostatic carcinoma |
| B | Benign prostatic hypertrophy |
| C | Acute prostatitis |
| D | Chronic intermittent prostatitis |
| E | Non-specific urethritis |

Explanation



- | | |
|---|----------------------------------|
| D | Chronic intermittent prostatitis |
|---|----------------------------------|

A Prostatic carcinoma

- This is unlikely given the intermittent (rather than progressive) nature of symptoms and only very mildly elevated PSA. Prostate carcinoma should remain within the differential given the mild

B Benign prostatic hypertrophy

This is unlikely to be the diagnosis given the normal-sized prostate.

- | | |
|---|-------------------|
| C | Acute prostatitis |
|---|-------------------|

E	Non-specific urethritis
---	-------------------------

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Next Question

[Previous Question](#)

Tag Question

Feedback

End Session

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Session Progress

Responses Correct:	0
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Responses Total:	61
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Back to Filters

Question 62 of 102

A 79-year-old woman who has been using co-codamol 30/500 tablets to control pain from an inoperable right breast carcinoma comes to the clinic. Other medication of note includes indapamide for hypertension. On examination her BP is 140/82 mmHg; she is complaining of right breast pain, as the tumour has broken through the skin and is covered by a large dressing.

Which of the following is the most appropriate way to manage her pain?

A	Add diclofenac to her regime	<div></div>
B	Stop the co-codamol, institute regular paracetamol with titrated PRN oral morphine	
C	Continue the co-codamol and add oral morphine	
D	Add tramadol to her regime	
E	Stop the co-codamol, institute regular paracetamol and BD MST	

21462

Submit

Previous Question

Skip Question

Calculator

Normal Values

Back to Filters

Question 62 of 102

A 79-year-old woman who has been using co-codamol 30/500 tablets to control pain from an inoperable right breast carcinoma comes to the clinic. Other medication of note includes indapamide for hypertension. On examination her BP is 140/82 mmHg; she is complaining of right breast pain, as the tumour has broken through the skin and is covered by a large dressing.

Which of the following is the most appropriate way to manage her pain?

- A

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- B

Stop the co-codamol, institute regular paracetamol with titrated PRN oral morphine
- C

Continue the co-codamol and add oral morphine
- D

Add tramadol to her regime
- E

Stop the co-codamol, institute regular paracetamol and BD MST

Explanation



- B

Stop the co-codamol, institute regular paracetamol with titrated PRN oral morphine

The optimal way to manage this patient with severe local symptoms from her breast cancer is to establish regular paracetamol as a base for pain relief and then titrate oral morphine until her pain is controlled. At this point the PRN morphine dose can be titrated to an appropriate level of MST.

- A

Add diclofenac to her regime

Whilst it is reasonable to add a NSAID to her regime, it's very unlikely to be effective until a stable morphine dose has been established.

- C

Continue the co-codamol and add oral morphine

It's illogical to maintain codeine (a weak opiate) at the same time as starting oral morphine. When it comes to transferring to MST it will only make dose calculation more complicated.

- D

Add tramadol to her regime

Although tramadol has the advantage of causing less constipation than codeine, it is only marginally more effective as an analgesic and hence changing to titrated morphine is the preferred option.

- E

Stop the co-codamol, institute regular paracetamol and BD MST

Titrating MST is much more difficult compared to titrating regular oral morphine, and hence this is not the recommended approach.

21462

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Average

Peer Responses %

Session Progress

Responses Correct:	0
Responses Incorrect:	62
Responses Total:	62
Responses - % Correct:	0%

Back to Filters

Question 63 of 102

A 62-year-old man presents with increasing shortness of breath over the past few months, weight loss and anorexia. He also has thoracic back pain. He has no other past medical history of note and used to work as a shipbuilder. On examination he looks thin, his BMI is 18. He has supraclavicular and inguinal lymphadenopathy. The left side of his chest is dull to percussion.

Investigations:

Hb	10.4 g/dl
WCC	10.2 x10 ⁹ /l
PLT	192 x10 ⁹ /l
Na ⁺	139 mmol/l
K ⁺	4.3 mmol/l
Creatinine	140 mol/l
Ca ²⁺	2.71 mmol/l
ALT	185 U/l
Albumin	35 g/l
CXR	Left sided pleural effusion
Pleural effusion	undifferentiated adenocarcinoma cells
Thoracic spine x-ray	T7 wedge fracture

Which of the following is the most appropriate way to make the diagnosis with respect to his bony lesion?

- A

MRI spine
- B

Bone biopsy
- C

Bone densitometry
- D

Tumour markers
- E

Parathyroid hormone assay

21560

Submit

Previous Question

Skip Question

Calculator

Normal Values

Question 63 of 102

Investigations:

Hb	10.4 g/dl
WCC	10.2 x10 ⁹ /l
PLT	192 x10 ⁹ /l
Na ⁺	139 mmol/l
K ⁺	4.3 mmol/l
Creatinine	140 μmol/l
Ca ²⁺	2.71 mmol/l
ALT	185 U/l
Albumin	35 g/l
CXR	Left sided pleural effusion
Pleural effusion	undifferentiated adenocarcinoma cells
Thoracic spine x-ray	T7 wedge fracture

1. **Introduction**
 2. **Methodology**
 3. **Results**
 4. **Conclusion**

- | | |
|---|---------------------------|
| A | MRI spine |
| B | Bone biopsy |
| C | Bone densitometry |
| D | Tumour markers |
| E | Parathyroid hormone assay |

- | | |
|---|-------------|
| B | Bone biopsy |
|---|-------------|

A	MRI spine
---	-----------

C	Bone densitometry
---	-------------------

- Bone densitometry

D	Tumour markers
---	----------------

E	Parathyroid hormone assay
---	---------------------------

the wedge fracture seen here:

[Next Question](#)

[Previous Question](#)

Tag Question

Feedback

End Session

Difficulty: Average

Peer Responses %

Conclusions

Session 1 Progress	
Responses Correct:	0
Responses Incorrect:	63
Responses Total:	63
Responses - % Correct:	0%

Back to Filters

Question 64 of 102

A 26-year-old woman presents to the clinic with increasing shortness of breath and a dry non-productive cough. She had undergone chemotherapy some nine months earlier for Hodgkin's lymphoma. Over the past few months she has suffered increasing shortness of breath. On examination she has inspiratory crackles throughout both lung fields. Her BP is normal at 142/78 mmHg, her pulse 88/min and there is no ankle swelling. Her O₂ saturation is 94% at rest on air. The remainder of her clinical examination is unremarkable.

Investigations;

Hb	12.4 g/dl
WCC	5.9 x10 ⁹ /l
PLT	193 x10 ⁹ /l
Na ⁺	139 mmol/l
K ⁺	4.6 mmol/l
Creatinine	120 mol/l
CXR	fine interstitial shadowing throughout both lung fields, more marked in the lower zones

Which of the following is the most likely diagnosis?



- A

Bleomycin toxicity
- B

Cisplatin toxicity
- C

Lymphangitis carcinomatosa
- D

Pulmonary metastases
- E

Lapatinib toxicity

21562

Submit

Previous Question

Skip Question

Calculator

Normal Values

Back to Filters

Question 64 of 102

A 26-year-old woman presents to the clinic with increasing shortness of breath and a dry non-productive cough. She had undergone chemotherapy some nine months earlier for Hodgkin's lymphoma. Over the past few months she has suffered increasing shortness of breath. On examination she has inspiratory crackles throughout both lung fields. Her BP is normal at 142/78 mmHg, her pulse 88/min and there is no ankle swelling. Her O₂ saturation is 94% at rest on air. The remainder of her clinical examination is unremarkable.

Investigations;

Hb	12.4 g/dl
WCC	5.9 x10 ⁹ /l
PLT	193 x10 ⁹ /l
Na ⁺	139 mmol/l
K ⁺	4.6 mmol/l
Creatinine	120 mol/l
CXR	fine interstitial shadowing throughout both lung fields, more marked in the lower zones

Which of the following is the most likely diagnosis?



A	Bleomycin toxicity
B	Cisplatin toxicity
C	Lymphangitis carcinomatosa
D	Pulmonary metastases
E	Lapatinib toxicity

Explanation

The answer is Bleomycin toxicity -

Bleomycin is used in chemotherapy regimens for haematological malignancies and is associated with pulmonary fibrosis. In clinical trials interstitial pneumonia / pulmonary fibrosis was said to occur in around 10% of patients. Lapatinib is used in the treatment of advanced breast cancer and is associated with left ventricular failure. Cisplatin is associated with a different toxicity profile, including neurotoxicity.

21562

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Next Question

Previous Question	Tag Question
Feedback	End Session

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Question 65 of 102

Investigations:

Which of the following neurological signs might you expect to find?



Skip Question

Question 65 of 102

Investigations:

Hb	11.1 g/dl
WCC	9.2 x10 ⁹ /l
PLT	193 x10 ⁹ /l
Na ⁺	140 mmol/l
K ⁺	4.9 mmol/l
Creatinine	142 μmol/l
Plasma Viscosity	2.4 mPa/s (1.50-1.72)
CT thorax	Apical right lung tumour, with evidence of local invasion

3

- | | |
|---|--|
| A | Right radial nerve palsy |
| B | Right median nerve palsy |
| C | Dilated right pupil that constricts in response to atropine |
| D | Constricted right pupil that dilates with atropine |
| E | Constricted right pupil that does not dilate in response to atropine |

- | | |
|---|--|
| E | Constricted right pupil that does not dilate in response to atropine |
|---|--|

A Right radial nerve palsy

- Pancoast's tumour is more likely to lead to a phrenic nerve palsy rather than a radial or median nerve palsy.
- B Right median nerve palsy

C Dilated right pupil that constricts in response to atropine

- Horner syndrome leads to pupil constriction rather than pupil dilatation.
- D Constricted right pupil that dilates with atropine

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Back to Filters

Question 66 of 102

A 17-year-old man presents with mild breast tenderness, weight loss and anxiety. He is known to have Klinefelter’s syndrome and had an undescended testis for which he underwent orchidopexy as a child. He has no other past medical history of note. On examination his BP is 125/73 mmHg, his BMI is 21, he has gynecomastia and small testes, his left appears more swollen than the right, but he tells you this is the one he had the operation on.

Investigations:

Hb	12.3 g/dl
WCC	16.9 x10 ⁹ /l
PLT	203 x10 ⁹ /l
Na ⁺	139 mmol/l
K ⁺	4.4 mmol/l
Creatinine	103 μmol/l
B-HCG	9,000 U/l (<5)
TSH	<0.05 U/l (<0.5-4.5)

Which of the following is the next most appropriate investigation?

- A

Ultrasound scan testes
- B

Thyroid autoantibodies
- C

Ultrasound thyroid
- D

MRI pituitary
- E

CXR

21575

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Question 66 of 102

Investigations:

Hb	12.3 g/dl
WCC	16.9 $\times 10^9$ /l
PLT	203 $\times 10^9$ /l
Na ⁺	139 mmol/l
K ⁺	4.4 mmol/l
Creatinine	103 μ mol/l
B-HCG	9,000 U/l (<5)
TSH	<0.05 U/l (<0.5-4.5)



A	Ultrasound scan testes
B	Thyroid autoantibodies
C	Ultrasound thyroid
D	<i>MRI pituitary</i>
E	CXR

The suspicion here is testicular cancer. Patients with a history of hypogonadism / undescended testis have a doubling or greater risk of developing testicular carcinoma. Due to commonality between HCG and TSH, profound rises in B-HCG result in hyperthyroidism, hence the symptoms of weight loss and anxiety, coupled with the suppressed TSH. Ultrasound scan of the testes is the optimal way to investigate suspected testicular carcinoma, with MRI providing little additional information. Testicular biopsy is not recommended, where ultrasound scanning is highly suggestive of a carcinoma, and other findings correlate, such as raised HCG, progression to orchidectomy is the most appropriate management.

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[Next Question](#)

[Previous Question](#)

[Tag Question](#)

[Feedback](#)

[End Session](#)

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Session Progress

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Responses Incorrect:	66
Responses Total:	66
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Back to Filters

Question 67 of 102

A 19-year-old man presents to the clinic with symptoms of lethargy and weight loss. He has a past history of orchidopexy for an undescended testis, but nil else of note. On examination he looks thin with a BMI of 18 and he has gynaecomastia. Testicular examination reveals no abnormal masses.

Investigations:

Hb	12.9 g/dl
WCC	8.1 x10 ⁹ /l
PLT	201 x10 ⁹ /l
Na ⁺	138 mmol/l
K ⁺	4.3 mmol/l
Creatinine	95 mol/l
FSH/LH	low
AFP	normal
CEA	normal
b-HCG	markedly elevated
ALT	130 U/l
Alk Phos	258 U/l

Which of the following is the most likely diagnosis?

- A

Hepatoma
- B

Seminoma
- C

Teratoma
- D

Testicular choriocarcinoma
- E

Hepatocellular carcinoma

23331

Submit

Previous Question

Skip Question

Calculator

Normal Values

Back to Filters

Question 67 of 102

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AFP	normal
CEA	normal
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ALT	130 U/l
Alk Phos	258 U/l

Which of the following is the most likely diagnosis?

- A

Hepatoma
- B

Seminoma
- C

Teratoma
- D

Testicular choriocarcinoma
- E

Hepatocellular carcinoma

Explanation

Pure testicular choriocarcinomas are rare, but they are associated with marked elevation in b-HCG in the presence of a normal AFP and CEA. The abnormal LFTs here suggest that metastases have already occurred. It is not unusual for the primary tumour to be very small and go undetected on testicular examination. Scrotal ultrasound is used to support the diagnosis, and staging CTs are of significant value. Choriocarcinoma is extremely sensitive to cisplatin based chemotherapy, with cure rates of up to 80% being achievable, even in advanced disease.

23331

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Next Question

- Previous Question

Feedback
- Tag Question

End Session

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Session Progress

Responses Correct:	0
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Back to Filters

Question 68 of 102

A 37-year-old lady underwent resection of a carcinoma of her left breast two years ago. She was given postoperative radiotherapy of 4000 cGy. The general practitioner has referred her for evaluation of a painful left arm associated with weakness. On examination in the clinic she is alert and anxious. The left palpebral fissure is slightly smaller than the right. Ocular movements are, however, normal. The left pupil is smaller than the right. Facial expression is normal, as are swallow and speech. The small muscles of the left hand are wasted and weak. Clawing is present, particularly affecting the left ring and little fingers. Hypo-aesthesia to pinprick is seen on the ulnar border of the left hand and forearm.

What is the most likely underlying diagnosis?

- A

Metastatic infiltration of the brachial plexus
- B

Radiation plexopathy
- C

Cervical ribs
- D

Syringomyelia
- E

Monomelic motor neurone disease

32849

Submit

Previous QuestionSkip Question

Calculator✔

Normal Values✔

Back to Filters

Question 68 of 102

A 37-year-old lady underwent resection of a carcinoma of her left breast two years ago. She was given postoperative radiotherapy of 4000 cGy. The general practitioner has referred her for evaluation of a painful left arm associated with weakness. On examination in the clinic she is alert and anxious. The left palpebral fissure is slightly smaller than the right. Ocular movements are, however, normal. The left pupil is smaller than the right. Facial expression is normal, as are swallow and speech. The small muscles of the left hand are wasted and weak. Clawing is present, particularly affecting the left ring and little fingers. Hypo-aesthesia to pinprick is seen on the ulnar border of the left hand and forearm.

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- A

Metastatic infiltration of the brachial plexus
- B

Radiation plexopathy
- C

Cervical ribs
- D

Syringomyelia
- E

Monomelic motor neurone disease

Explanation



- A

Metastatic infiltration of the brachial plexus

The lesion localises to the lower brachial plexus since the small muscles of the hand are wasted and weak, and the clawing involves all fingers but predominantly the fourth and fifth. No fasciculations are mentioned. The sensory loss is in the C8 T1 distribution and the associated Horner syndrome points to the involvement of the T1 root.

- B

Radiation plexopathy

Radiation plexopathy usually occurs after doses of more than 6000 cGy have been used and involves the upper brachial plexus. It is usually painless and associated with lymphoedema.

- C

Cervical ribs

A cervical rib leads to thoracic outlet syndrome involving C7; it is rare, occurring in 1 in 500 people, and a lesion related to breast cancer should be considered first.

- D

Syringomyelia

Syringomyelia presents with progressive bilateral weakness affecting the arms and legs, accompanied by dissociated sensory loss.

- E

Monomelic motor neurone disease

This is a focal motor neurone disease which would not lead to the sensory loss seen here, and cannot therefore be responsible for the symptoms seen.

32849

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Next Question

Previous Question

Feedback

Tag Question

End Session

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Session Progress

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Responses Incorrect:	68
Responses Total:	68
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Back to Filters

Question 69 of 102

As a registrar at the Well-Women Clinic, you have just received the histology results via phone from the pathology department on a fine needle aspiration biopsy of a 35-year-old professional woman that indicates that she has a carcinoma of the breast. Your consultant is away and it is up to you to break the news to the patient who will be attending clinic the same afternoon.

Which of the following is important to adhere to when informing the patient of her diagnosis?

- A

Phone the patient immediately and inform her of the bad news

☰
- B

Ensure you have a private room for her clinic consultation
- C

Ensure that it is only you and the patient in the consulting room
- D

Avoid eye contact
- E

Reassure the patient that there is nothing to worry about given her young age

33407

Submit

Previous QuestionSkip Question

Calculator✔

Normal Values✔

Back to Filters

Question 69 of 102

As a registrar at the Well-Women Clinic, you have just received the histology results via phone from the pathology department on a fine needle aspiration biopsy of a 35-year-old professional woman that indicates that she has a carcinoma of the breast. Your consultant is away and it is up to you to break the news to the patient who will be attending clinic the same afternoon.

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☰
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- C

Ensure that it is only you and the patient in the consulting room
- D

Avoid eye contact
- E

Reassure the patient that there is nothing to worry about given her young age

Explanation

⚙

- B

Ensure you have a private room for her clinic consultation

The way a doctor breaks bad news to a patient leaves an indelible mark on the patient-doctor relationship, and most doctors feel unprepared to deal with the emotional demands of such sessions. However, informing a patient that he or she has cancer for the first time is made easier for most doctors since hope can be offered in the form of treatment options. Talking face to face in a private room is obviously key with respect to allowing the patient time to voice concerns about her diagnosis.

- A

Phone the patient immediately and inform her of the bad news

This leaves the discussion open to misinterpretation versus a face-to-face consultation, and leaving the patient without immediate support, particularly in the event that she is home alone.

- C

Ensure that it is only you and the patient in the consulting room

It's important to make sure that a third person joins you, such as a specialist nurse, who can offer further support and advice once the diagnosis has been discussed.

- D

Avoid eye contact

It's important to maintain eye contact, repeating key points, listening to and not interrupting the patient, so that they have the maximum chance to gain key information about their diagnosis.

- E

Reassure the patient that there is nothing to worry about given her young age

Age is only one prognostic indicator for breast cancer; it's most important not to give false reassurance, and a realistic discussion about outcomes and potential interventions is most important.

33407

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Next Question

Previous Question

Tag Question

Feedback

End Session

Difficulty: Average

Peer Responses %

Session Progress

Responses Correct:	0
Responses Incorrect:	69
Responses Total:	69
Responses - % Correct:	0%

Back to Filters

Question 70 of 102

A 70-year-old man presents to his GP practice complaining of a change in the colour of his urine for the past 2 weeks – it is more pink than yellow. This change is not associated with any pain and he is not experiencing any increased frequency of urination. He is otherwise fit and well but does suffer from nocturia related to prostatic enlargement. He is non-smoker. He has only recently retired from his job as an engineer in a paint manufacturing plant. The GP suspects that this patient may have an underlying bladder cancer and hence initiates appropriate investigations. The patient wants to discuss any potential risk factors he may have for bladder cancer.

Which of the following is the strongest risk factor for the development of bladder cancer?



- | | |
|---|-------------------------------|
| A | Excessive alcohol consumption |
| B | Exposure to aromatic amines |
| C | Coffee consumption |
| D | Artificial sweetener intake |
| E | Mutation of chromosome 11q13 |

33408

Submit

Previous QuestionSkip Question

Calculator✔

Normal Values✔

Back to Filters

Question 70 of 102

A 70-year-old man presents to his GP practice complaining of a change in the colour of his urine for the past 2 weeks – it is more pink than yellow. This change is not associated with any pain and he is not experiencing any increased frequency of urination. He is otherwise fit and well but does suffer from nocturia related to prostatic enlargement. He is non-smoker. He has only recently retired from his job as an engineer in a paint manufacturing plant. The GP suspects that this patient may have an underlying bladder cancer and hence initiates appropriate investigations. The patient wants to discuss any potential risk factors he may have for bladder cancer.

Which of the following is the strongest risk factor for the development of bladder cancer?



- A

Excessive alcohol consumption
- B

Exposure to aromatic amines
- C

Coffee consumption
- D

Artificial sweetener intake
- E

Mutation of chromosome 11q13

Explanation



- B

Exposure to aromatic amines

Bladder cancer is a common urological cancer, with most cases being transitional cell carcinomas. It has a male-to-female ratio of 3:1, with women generally having a worse prognosis than men. The most classical presentation is with total, gross, painless haematuria. Bladder cancer is associated with a number of environmental risk factors, including smoking, industrial exposure to aromatic amines, prior radiation treatment to the pelvis and exposure to a urinary metabolite of cyclophosphamide (acrolein).

- A

Excessive alcohol consumption

Alcohol consumption is linked to a range of cancers including oesophageal, primary liver and a range of cancers linked to weight gain and increased insulin resistance.

- C

Coffee consumption

Coffee *per se* has not been identified as a cause of cancer, although very hot drinks are associated with increased risk of carcinoma of the oesophagus.

- D

Artificial sweetener intake

Although initial concerns were raised about artificial sweeteners being linked to bladder cancer, extensive epidemiological studies have revealed no link.

- E

Mutation of chromosome 11q13

Certain genetic mutations have also been identified as causing bladder cancer. These include mutations on 17p13.1, the gene coding for p53, mutations of which are associated with high-grade bladder cancer, and 9p15 and 9p16, another tumour suppressor gene associated with low-grade and superficial tumours. 11q13 gene mutations are associated with increased risk of oral cancers.

33408

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- Previous Question

Feedback
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Back to Filters

Question 71 of 102

A concerned 29-year-old female attends her GP practice complaining of 2 days of painless rectal bleeding. There has been no change in her bowel habit. She denies any other constitutive symptoms and has no significant travel history. She is particularly concerned since her mother, who is 48 years old, has recently been diagnosed with cancer of the bowel. On further questioning, it appears that her maternal grandfather also died with bowel cancer. The GP suspects that there may be an inherited tendency towards this disease and is especially concerned about familial adenomatous polyposis.

What physical feature is most commonly found in this condition?

- A

Hypertrophy of the retinal pigment epithelium
- B

Early onset cataracts
- C

Axillary freckling
- D

Cutaneous lipomas
- E

Pre-auricular skin tags

33410

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Back to Filters

Question 71 of 102

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- A

Hypertrophy of the retinal pigment epithelium
- B

Early onset cataracts
- C

Axillary freckling
- D

Cutaneous lipomas
- E

Pre-auricular skin tags

Explanation ⚙

- A

Hypertrophy of the retinal pigment epithelium

Familial adenomatous polyposis (FAP) is an autosomal dominant condition characterised by the presence of hundreds of adenomatous polyps throughout the colon. There is a wide phenotypic spectrum of FAP, with all phenotypes having an underlying germ-line mutation in the adenomatous polyposis coli gene. The average age of the polyposis is 16 years, with all patients having this syndrome developing colon cancer if left untreated. The average age of onset of colorectal cancer is 39 years. Physical features associated with this condition include congenital hypertrophy of the retinal pigment epithelium, dental abnormalities including supernumerary teeth and dentigerous cysts, osteomas of the skull and mandible, and fibromas and epidermoid cysts in prepubescent patients.

- B

Early onset cataracts

Early onset cataracts may be associated with decreased antioxidative activity, and have been shown in epidemiological studies to be associated with increased risk of head and neck cancer and hepatoma.

- C

Axillary freckling

Axillary freckling is identified in hereditary non-polyposis cancer, rather than FAP.

- D

Cutaneous lipomas

Lipomas *per se* are not associated with increased risk of cancer, although weight gain is associated with a range of cancers including colon and breast cancer, which are linked to increased insulin resistance.

- E

Pre-auricular skin tags

Abnormalities of the ear cartilage are more commonly associated with renal and cardiac abnormalities. They are not thought to be associated with increased risk of colonic polyps.

33410

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Average

Peer Responses %

Session Progress

Responses Correct:	0
Responses Incorrect:	71
Responses Total:	71
Responses - % Correct:	0%

Back to Filters

Question 72 of 102

A 48-year-old woman presents with a left leg deep venous thrombosis. On further questioning there is a history of increasing abdominal distension and bloating over the past few months. She has had no children and her menses began when she was aged 14. She used the oral contraceptive pill intermittently over the course of 20 years. Her father died of colon cancer at the age of 72. On examination there is evidence of ascites and a left ovarian mass. Ultrasound confirms the ovarian mass, and raised CA-125 is suggestive of ovarian carcinoma.

Which one of the following factors in her history is most associated with risk of ovarian cancer?

- A

Family history of colonic carcinoma
- B

History of previous DVT
- C

Menarche at age 14
- D

Use of oral contraceptive pill
- E

Nulliparity

33411

Submit

Previous QuestionSkip Question

Calculator✔

Normal Values✔

Back to Filters

Question 72 of 102

A 48-year-old woman presents with a left leg deep venous thrombosis. On further questioning there is a history of increasing abdominal distension and bloating over the past few months. She has had no children and her menses began when she was aged 14. She used the oral contraceptive pill intermittently over the course of 20 years. Her father died of colon cancer at the age of 72. On examination there is evidence of ascites and a left ovarian mass. Ultrasound confirms the ovarian mass, and raised CA-125 is suggestive of ovarian carcinoma.

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- A

Family history of colonic carcinoma
- B

History of previous DVT
- C

Menarche at age 14
- D

Use of oral contraceptive pill
- E

Nulliparity

Explanation

- E

Nulliparity

Ovarian carcinoma can occur in girls as young as 15 years, but the commonest age at presentation is 56 years. It occurs most commonly in Caucasian women from industrialised countries. There is an association with early menarche, late menopause and nulliparity. Amongst lifestyle factors a high-fat diet has been linked in some cohort studies to the development of the disease. A steady decrease in risk is seen in association with increased parity and use of the oral contraceptive pill.

- A

Family history of colonic carcinoma

A history of breast carcinoma and a family history of breast and ovarian carcinoma are associated with increased risk of ovarian cancer, (in this case due to increased risk of the BRCA1 mutation).

- B

History of previous DVT

Although current DVT is associated with cancer, history of previous deep venous thrombosis isn't a risk factor.

- C

Menarche at age 14

Menarche at age 14 is relatively late, this isn't associated with increased risk of ovarian cancer.

- D

Use of oral contraceptive pill

Use of the oral contraceptive pill is associated with protection from, not with increased risk of, ovarian cancer.

33411

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Average

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Session Progress

Responses Correct:	0
Responses Incorrect:	72
Responses Total:	72
Responses - % Correct:	0%

Back to Filters

Question 73 of 102

A 46-year-old man presents with a first grand mal seizure while at a Christmas party. On admission he is post-ictal and drowsy. His girlfriend reports increasingly severe headaches over the past few weeks. The following morning he receives a CT scan with contrast and he is found to have a primary brain tumour with surrounding oedema, which is isodense to surrounding brain tissue. Biopsy reveals highly atypical poorly differentiated small round cells.

Which is the optimal intervention for this patient’s likely brain tumour?



A	Immunotherapy
B	Complete surgical excision
C	Surgical debulking
D	Boron neutron capture therapy
E	Cisplatin

33412

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Back to Filters

Question 73 of 102

A 46-year-old man presents with a first grand mal seizure while at a Christmas party. On admission he is post-ictal and drowsy. His girlfriend reports increasingly severe headaches over the past few weeks. The following morning he receives a CT scan with contrast and he is found to have a primary brain tumour with surrounding oedema, which is isodense to surrounding brain tissue. Biopsy reveals highly atypical poorly differentiated small round cells.

Which is the optimal intervention for this patient’s likely brain tumour?

- A

Immunotherapy
- B

Complete surgical excision
- C

Surgical debulking
- D

Boron neutron capture therapy
- E

Cisplatin

Explanation ⚙

C

Surgical debulking

This patient has glioblastoma multiforme, characterised by a rapidly growing tumour consisting of poorly differentiated small round cells. Patients commonly present with rapidly increasing headaches or seizures, but may also suffer from focal neurological deficits. Treatment involves surgical debulking (as excision is impossible), radiotherapy and chemotherapy with agents such as temozolamide (an oral alkylating agent).

A

Immunotherapy

Immunotherapies including novel vaccine approaches show promise in the treatment of glioblastoma, although currently none are actually approved for treatment of the condition.

B

Complete surgical excision

Complete surgical excision is not usually successful for glioblastoma.

D

Boron neutron capture therapy

Although boron neutron capture therapy has shown promise in some clinical trials, debulking with adjuvant chemotherapy remains the mainstay of treatment.

E

Cisplatin

Temozolamide, not platinum-based therapy, is the main agent used in the treatment of glioblastoma. Median survival for cases of glioblastoma multiforme has barely improved past 1 year.

33412

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Average

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Session Progress

Responses Correct:	0
Responses Incorrect:	73
Responses Total:	73
Responses - % Correct:	0%

Back to Filters

Question 74 of 102

A 62-year-old man with a 40 pack-year history of smoking presents for review with a history of chronic cough and weight loss for some time. A recent episode of haemoptysis has precipitated his attendance at hospital. On examination he is emaciated and there is evidence of Horner syndrome. Serum calcium is 3.4 mmol/l. Chest X-ray and bronchoscopy with transbronchial biopsies confirm the presence of a stage IIIa bronchial neoplasm. His calcium is managed with rehydration and pamidronate.

Which of the following is the best way to manage this patient's lung cancer?

- | | |
|---|--|
| A | Surgical excision |
| B | Radiotherapy |
| C | Platinum-based chemotherapy and radiotherapy |
| D | Neoadjuvant chemotherapy followed by surgery |
| E | Surgical excision followed by chemotherapy |

33413

Submit

Previous QuestionSkip Question

Calculator✔

Normal Values✔

Back to Filters

Question 74 of 102

A 62-year-old man with a 40 pack-year history of smoking presents for review with a history of chronic cough and weight loss for some time. A recent episode of haemoptysis has precipitated his attendance at hospital. On examination he is emaciated and there is evidence of Horner syndrome. Serum calcium is 3.4 mmol/l. Chest X-ray and bronchoscopy with transbronchial biopsies confirm the presence of a stage IIIa bronchial neoplasm. His calcium is managed with rehydration and pamidronate.

Which of the following is the best way to manage this patient's lung cancer?

- A

Surgical excision
- B

Radiotherapy
- C

Platinum-based chemotherapy and radiotherapy
- D

Neoadjuvant chemotherapy followed by surgery
- E

Surgical excision followed by chemotherapy

Explanation ⚙️

- C

Platinum-based chemotherapy and radiotherapy

The presence of Horner syndrome suggests significant local invasion and that surgical resection is likely to be impossible. The presence of raised serum calcium suggests the possibility of a squamous cell carcinoma, the most likely to produce PTHrp (parathyroid hormone-related peptide). The most pressing acute need is of course to reduce the serum calcium, and rehydration and IV pamidronate would be the main treatments in this case. Platinum-based chemotherapy and radiotherapy would be the standard care in patients with an irresectable tumour of this type, given concurrently, since studies show that there is an overall improvement in survival rates versus each modality used alone. Cisplatin/vinblastine, and cisplatin/etoposide are commonly used regimens. Immunotherapy with checkpoint inhibitor-based drugs shows promise and will become available over the next few years.

- A

Surgical excision

Given this patient has Horner syndrome, surgical excision will prove impossible, driving chemotherapy and radiotherapy as the most appropriate intervention.

- B

Radiotherapy

Radiotherapy alone is proven to be less effective than in combination with chemotherapy. As such, radiotherapy as a single treatment modality is inappropriate unless there are significant tolerability issues with chemotherapy regimens.

- D

Neoadjuvant chemotherapy followed by surgery

This patient is unsuitable for surgery based on locally advanced disease/invasion leading to Horner syndrome. For this reason the option is incorrect.

- E

Surgical excision followed by chemotherapy

This is the approach of choice for patients with stage III disease that is suitable for resection, but in this case the Horner syndrome precludes proceeding to surgery.

33413

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Average

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Session Progress

Responses Correct:	0
Responses Incorrect:	74
Responses Total:	74
Responses - % Correct:	0%

Back to Filters

Question 75 of 102

A man of 62 years with advancing jaundice is referred by his GP. There is a history of variable alcohol consumption and a long spell working in the Far East and Africa for an oil company, and mild hypertension, but there is no other history of note. On examination he has features of advanced cirrhosis. Alpha-fetoprotein is elevated and hepatic ultrasound is suggestive of a hepatocellular carcinoma.

Which one of the following would you associated with hepatocellular carcinoma in this patient?

- | | |
|---|--------------------------------|
| A | Dietary exposure to aflatoxin |
| B | Caffeine exposure |
| C | Aniline dye exposure |
| D | Hepatitis E infection |
| E | Primary sclerosing cholangitis |

33414

Submit

Previous Question

Skip Question

Calculator

Normal Values

Back to Filters

Question 75 of 102

A man of 62 years with advancing jaundice is referred by his GP. There is a history of variable alcohol consumption and a long spell working in the Far East and Africa for an oil company, and mild hypertension, but there is no other history of note. On examination he has features of advanced cirrhosis. Alpha-fetoprotein is elevated and hepatic ultrasound is suggestive of a hepatocellular carcinoma.

Which one of the following would you associated with hepatocellular carcinoma in this patient?



- A Dietary exposure to aflatoxin
- B Caffeine exposure
- C Aniline dye exposure
- D Hepatitis E infection
- E Primary sclerosing cholangitis

Explanation



- A Dietary exposure to aflatoxin

Conditions associated with increased risk of hepatocellular carcinoma include hepatitis B infection, hepatitis C infection, haemochromatosis and exposure to dietary aflatoxin (found in mouldy foodstuffs in Africa and the Far East; results in DNA damage and p53 mutations). Rarer associations include primary biliary cirrhosis, androgenic steroids, oral contraceptives and porphyria cutanea tarda. Treatment options involve chemical and radiofrequency ablation, and embolisation. Surgical resection is rarely performed, and only around 5% of cases are considered suitable for liver transplant.

- B Caffeine exposure

Caffeine exposure is not associated with liver cancer, and epidemiology studies suggest it may actually be protective against conditions such as pancreatitis and cholecystitis.

- C Aniline dye exposure

Aniline dye exposure is associated with increased risk of bladder cancer.

- D Hepatitis E infection

Hepatitis E is usually associated with short-term hepatitis transmitted by the faeco-oral route, in a similar way to hepatitis A.

- E Primary sclerosing cholangitis

Primary sclerosing cholangitis is usually associated with increased risk of cholangiocarcinoma, and we're given no history here of previous inflammatory bowel disease (which is strongly associated with PSC).

33414

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Next Question

Previous Question

Feedback

Tag Question

End Session

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Back to Filters

Question 76 of 102

A 67-year-old man presents with increasing fatigue and low back pain for the past four months. Blood tests reveal a mild normocytic, normochromic anaemia, low white cell and platelet counts and a high ESR. Blood urea, electrolytes and serum alkaline phosphatase levels are normal, liver function testing reveals raised total protein, and globulin fraction. An X-ray of the lumbosacral spine shows lytic lesions.

Which of the following investigations would be most helpful in confirming the diagnosis?

- | | |
|---|----------------------|
| A | Serum calcium |
| B | Lymph node biopsy |
| C | Serum albumin |
| D | Bone marrow aspirate |
| E | Bone densitometry |

33415

Submit

Previous QuestionSkip Question

Calculator✔

Normal Values✔

Back to Filters

Question 76 of 102

A 67-year-old man presents with increasing fatigue and low back pain for the past four months. Blood tests reveal a mild normocytic, normochromic anaemia, low white cell and platelet counts and a high ESR. Blood urea, electrolytes and serum alkaline phosphatase levels are normal, liver function testing reveals raised total protein, and globulin fraction. An X-ray of the lumbosacral spine shows lytic lesions.

Which of the following investigations would be most helpful in confirming the diagnosis?

- A

Serum calcium
- B

Lymph node biopsy
- C

Serum albumin
- D

Bone marrow aspirate
- E

Bone densitometry

Explanation

The answer is Bone marrow aspirate

Clear criteria have been defined for the diagnosis of myeloma and the other causes of paraproteinaemia, and bone marrow examination is a crucial in confirming the diagnosis.

MGUS	Asymptomatic myeloma	Symptomatic myeloma
<ul style="list-style-type: none">• Monoclonal protein in serum <30 g/L• Bone marrow clonal plasma cells <10% and low level of plasma cell infiltration in a trephine biopsy• No myeloma-related organ or tissue impairment (including bone lesions) or symptoms• No evidence of other B-cell proliferative disorders or light-chain associated amyloidosis or other light-chain, heavy-chain or immunoglobulin-associated tissue damage	<ul style="list-style-type: none">• Monoclonal protein in serum >30 g/L and/or• Bone marrow clonal plasma cells >10%• No myeloma-related organ or tissue impairment (including bone lesions) or symptoms	<ul style="list-style-type: none">• Monoclonal protein in serum and/or urine• Bone marrow (clonal) plasma cells or biopsy proven plasmacytoma• Any myeloma-related organ or tissue impairment (including bone lesions)

33415

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★

Next Question

Previous Question

Feedback

Tag Question

End Session

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Session Progress

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Responses Incorrect:	76
Responses Total:	76
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Back to Filters

Question 77 of 102

A 62-year-old woman presents with persistent cough, chest pain, confusion, nausea and irritability. Bronchoscopy reveals a small cell carcinoma of the lung.

Which of the following options is a possible endocrine manifestation of this tumour?



- A

Galactorrhoea
- B

Impaired glucose tolerance
- C

Cold intolerance
- D

Hypercalcaemia
- E

Depigmentation

33416

Submit

Previous Question

Skip Question

Calculator

✔

Normal Values

✔

Back to Filters

Question 77 of 102

A 62-year-old woman presents with persistent cough, chest pain, confusion, nausea and irritability. Bronchoscopy reveals a small cell carcinoma of the lung.

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- A

Galactorrhoea
- B

Impaired glucose tolerance
- C

Cold intolerance
- D

Hypercalcaemia
- E

Depigmentation

Explanation

- B

Impaired glucose tolerance

Approximately 20% of cases with bronchial carcinoma are of the small cell type and arise from endocrine (Kulchitsky) cells. Syndrome of inappropriate ADH secretion (SIADH) and ectopic secretion of ACTH are the two commonest endocrine paraneoplastic manifestations, occurring in 5-10 and 5% of cases, respectively. Ectopic atrial natriuretic peptide secretion can also occur. Features of ectopic ACTH secretion include weight gain, abdominal striae, hypertension and impaired glucose tolerance.

- A

Galactorrhoea

Galactorrhoea is associated with hyperprolactinaemia, which isn't a feature of small cell bronchial carcinoma.

- C

Cold intolerance

Cold intolerance suggests hypothyroidism, which isn't a feature of small cell bronchial carcinoma.

- D

Hypercalcaemia

Hypercalcaemia is associated with production of PTHrp, which is produced by squamous cell carcinoma of the bronchus.

- E

Depigmentation

Depigmentation suggests vitiligo, which is an autoimmune phenomenon.

33416

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Next Question

Previous Question

Feedback

Tag Question

End Session

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Session Progress

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Back to Filters

Question 78 of 102

A 59-year-old GP with a previous history of alcoholism complains of deep, boring abdominal pain radiating through into the back. He smokes 10 cigarettes per day. There is a history of anorexia and weight loss over the past three months. A CT scan shows the presence of a mass 3 cm in diameter in the body of the pancreas. CA-19-9 levels are elevated, FNA reveals a ductal adenocarcinoma. He wants more information about his cancer.

Which of the following is true with regards to his disease?

-
- A

He is likely to be cured with a Whipple’s procedure
- B

His tumour is likely to be insulin secreting
- C

5-year survival is more than 20%
- D

Smoking is likely to have contributed to the development of his cancer
- E

Immunotherapy is proven to influence survival in the disease

33417

Submit

Previous QuestionSkip Question

Calculator✔

Normal Values✔

Back to Filters

Question 78 of 102

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- B

His tumour is likely to be insulin secreting
- C

5-year survival is more than 20%
- D

Smoking is likely to have contributed to the development of his cancer
- E

Immunotherapy is proven to influence survival in the disease

Explanation

⚙

- D

Smoking is likely to have contributed to the development of his cancer

Smoking is thought to increase the risk of pancreatic cancer twofold, and in total smoking is thought to account for up to 30% of cases of the disease.

- A

He is likely to be cured with a Whipple’s procedure

Only around 20% of patients are suitable to undergo resection, and in those who do, combination surgery and chemotherapy achieves a survival of around 20% at 5 years.

- B

His tumour is likely to be insulin secreting

Pancreatic cancer is usually ductal adenocarcinoma in histology, and is exocrine rather than endocrine in nature.

- C

5-year survival is more than 20%

5-year survival only approaches 20% when resection is possible; where it isn’t, survival is less than 5%.

- E

Immunotherapy is proven to influence survival in the disease

Although immunotherapy (involving activated T cells and vaccination against pancreatic carcinoma cell antigens) shows promise, as yet it is not proven to impact on survival in the disease.

33417

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Next Question

- Previous Question

Tag Question
- Feedback

End Session

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Session Progress

Responses Correct:	0
Responses Incorrect:	78
Responses Total:	78
Responses - % Correct:	0%

Back to Filters

Question 79 of 102

A 35-year-old woman presents with enlarged cervical lymph nodes. She is asymptomatic. Blood tests show a low-grade anaemia, elevated white cell count and thrombocytopenia. Lymph node biopsy is suggestive of diffuse large B-cell non-Hodgkin’s lymphoma.

Which of the following is likely to be found expressed on the lymphoma cells?

- | | |
|---|-------|
| A | CD3 |
| B | CD19 |
| C | CD30 |
| D | CD5 |
| E | CD177 |

33418

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Back to Filters

Question 79 of 102

A 35-year-old woman presents with enlarged cervical lymph nodes. She is asymptomatic. Blood tests show a low-grade anaemia, elevated white cell count and thrombocytopenia. Lymph node biopsy is suggestive of diffuse large B-cell non-Hodgkin's lymphoma.

Which of the following is likely to be found expressed on the lymphoma cells?

- A

CD3
- B

CD19
- C

CD30
- D

CD5
- E

CD177

Explanation

- B

CD19

A number of B lymphocyte cell surface antigens are expressed on lymphoma cells. These include CD19, CD20, CD22 and CD79a, as well as CD45. Between 50 and 75% of B-cell lymphomas also express immunoglobulin.

- A

CD3

CD3 is a T-cell receptor and hence it isn't usually expressed on B-cell lymphomas.

- C

CD30

CD30 is expressed in approximately 30% of cases of B-cell lymphoma, and it is associated with a favourable prognosis.

- D

CD5

CD5 is uncommonly expressed on B-cell lymphomas and is associated with a poor prognosis.

- E

CD177

CD177 is expressed by neutrophils and is therefore not relevant with respect to evaluation of B-cell lymphoma.

33418

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Next Question

- Previous Question

Tag Question
- Feedback

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Back to Filters

Question 80 of 102

A 64-year-old chronic smoker with known small cell carcinoma of the lung complains of inability to get out of bed in the mornings. However, after moving around for a few minutes, he is able to regain his strength. Anti-voltage-gated calcium channel antibodies are positive.

Which one of the following is the most appropriate initial intervention?



- | | |
|---|---------------------|
| A | Azathioprine |
| B | Ciclosporin |
| C | 3,4-diaminopyridine |
| D | Prednisolone |
| E | Pyridostigmine |

33419

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Question 80 of 102

Which one of the following is the most appropriate initial intervention?

- | | |
|---|---------------------|
| A | Azathioprine |
| B | Ciclosporin |
| C | 3,4-diaminopyridine |
| D | Prednisolone |
| E | Pyridostigmine |

- | | |
|---|---------------------|
| C | 3,4-diaminopyridine |
|---|---------------------|

A	Azathioprine
---	--------------

- This is a steroid-sparing agent used in severe LEMS. Azathioprine is commenced in patients who require systemic corticosteroids to maintain muscle strength.

- | | |
|---|-------------|
| B | Ciclosporin |
|---|-------------|

Ciclosporin is an alternative steroid-sparing agent for the treatment of LEMs; other options apart from ciclosporin and azathioprine include mycophenolate and methotrexate.

- | | |
|---|--------------|
| D | Prednisolone |
|---|--------------|

Prednisolone is the first-line option for immunosuppression in patients who fail to gain adequate improvement in muscle strength

- E Pyridostigmine

Although pyridostigmine is effective in treating myasthenia gravis, it is not of value in treating LEMS.

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[Previous Question](#)

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Figure 10

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Session Progress

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Back to Filters

Question 81 of 102

A 35-year-old woman attended for routine follow-up following successful treatment for Hodgkin’s disease at the age of 15 years with mantle radiotherapy. She was well and had no abnormal findings on examination. Full blood count and biochemistry were normal. Routine chest X-ray was unremarkable. A breast MRI is arranged.

What other investigation is mandatory for this patient?



- | | |
|---|-------------------------------------|
| A | Bone marrow aspiration and trephine |
| B | Thyroid function tests |
| C | CT scan of the chest |
| D | ECHOCardiogram |
| E | Pulmonary function tests |

33420

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Back to Filters

Question 81 of 102

A 35-year-old woman attended for routine follow-up following successful treatment for Hodgkin’s disease at the age of 15 years with mantle radiotherapy. She was well and had no abnormal findings on examination. Full blood count and biochemistry were normal. Routine chest X-ray was unremarkable. A breast MRI is arranged.

What other investigation is mandatory for this patient?

- A Bone marrow aspiration and trephine
- B Thyroid function tests
- C CT scan of the chest
- D ECHOCardiogram
- E Pulmonary function tests

Explanation

- B Thyroid function tests

Mantle radiotherapy was introduced during the 1960s for people with Hodgkin’s disease and whose cancer was confined to lymph glands in the chest, neck or under the arms. The aim of the treatment was to give radiotherapy to all the lymph glands lying above the diaphragm.

Thyroid disease is common in patients irradiated in the mantle portion of the chest. Studies show that approximately one-third of patients who received radiotherapy between 1961 and 1989 had evidence of thyroid disease, with an actuarial risk of 52% at 20 years and 67% at 26 years. Hyperthyroidism is the most common problem, and the incidence of Graves’ hyperthyroidism (Graves’ disease) is small but still 7-20-fold more common than in people not receiving radiation therapy. Thyroid nodules appeared in a small percentage, with a very small percentage of papillary or follicular cancers forming. The risk of thyroid cancer is measured at over 15-fold that the general population.

Women who were treated with mantle radiotherapy are also at a greater risk of developing breast cancer. If they were treated in childhood, between 1 in 7 and 1 in 3 women will get breast cancer at some point in the 25 years following their Hodgkin’s lymphoma treatment. If they were treated in their 20s, between 1 in 7 and 1 in 4 women will get breast cancer at some point in the 25 years following treatment.

The individual risk for any woman depends on:

- age when treated
- the total dose of radiotherapy administered
- time since radiotherapy administered
- current age.

Because of the increased breast cancer risk, the Department of Health has arranged for radiotherapy centres to contact all women treated under the age of 35 years for Hodgkin’s lymphoma since 1962, to ensure they are enrolled on an appropriate screening programme.

- A Bone marrow aspiration and trephine

The main dose of radiation from mantle radiotherapy affects the anterior neck and chest, and hence evaluation of the thyroid and breasts is most important.

- C CT scan of the chest

CT scanning of the chest involves a further large dose of radiation. Where possible MRI imaging is preferred in this scenario.

- D ECHOCardiogram

Over the long term radiotherapy can lead to constrictive pericarditis, although without any symptoms this is less likely to be the diagnosis here.

- E Pulmonary function tests

Radiation-induced lung fibrosis is seen although radiotherapy is targeted to the mediastinum in Hodgkin’s, reducing the risk of significant pulmonary fibrosis.

33420

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Next Question

[Previous Question](#)[Tag Question](#)

[Feedback](#)[End Session](#)

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Session Progress

Responses Correct:	0
Responses Incorrect:	81
Responses Total:	81
Responses - % Correct:	0%

Back to Filters

Question 82 of 102

A 35-year-old patient with newly diagnosed stage III diffuse large B cell lymphoma is being considered for CHOP chemotherapy with additional rituximab.

What one of the following side effects is most commonly seen in association with rituximab therapy?



- | | |
|---|-------------------------|
| A | PML |
| B | Bullous skin reactions |
| C | Oral mucositis |
| D | Fever and rigors |
| E | Palmar plantar syndrome |

33422

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Back to Filters

Question 82 of 102

A 35-year-old patient with newly diagnosed stage III diffuse large B cell lymphoma is being considered for CHOP chemotherapy with additional rituximab.

What one of the following side effects is most commonly seen in association with rituximab therapy?

- A

PML
- B

Bullous skin reactions
- C

Oral mucositis
- D

Fever and rigors
- E

Palmar plantar syndrome

Explanation ⚙

- D

Fever and rigors

Rituximab is a monoclonal antibody that targets CD20 on the surface of B lymphocytes.

The most common side effects are:

- flu-like symptoms – these include a high temperature, chills, weakness, muscle aches, tiredness, dizziness and headaches during the infusion
- low blood pressure during the infusion
- nausea and occasional vomiting
- tumour pain
- allergic reactions – signs of this include skin rashes and itching, a feeling of swelling in the tongue or throat, irritation of the nasal passages, wheezing, a cough and breathlessness
- facial flushing during the infusion.

- A

PML

PML, or progressive multifocal leukoencephalopathy, is very rarely reported with rituximab therapy, usually when this is used in combination with other therapies.

- B

Bullous skin reactions

Bullous skin reactions are rarely seen in patients treated with rituximab. Other skin disorders such as itching, erythematous rashes and alopecia are commonly seen.

- C

Oral mucositis

Oral mucositis is more likely to be seen in patients treated with conventional chemotherapy agents rather than with rituximab.

- E

Palmar plantar syndrome

Palmar plantar syndrome, also known as chemotherapy-induced acral erythema, is associated with capecitabine therapy.

33422

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Average

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Session Progress

Responses Correct:	0
Responses Incorrect:	82
Responses Total:	82
Responses - % Correct:	0%

Back to Filters

Question 83 of 102

A 45-year-old female had stage II breast cancer and was treated with surgery, adjuvant chemotherapy and radiotherapy. The cancer was oestrogen receptor positive and progesterone receptor negative. Following the radiotherapy she was given tamoxifen. The patient’s periods had stopped before completion of the chemotherapy course and she now complains of debilitating hot flushes.

Which of the following can you recommend?



- | | |
|---|-------------------------------|
| A | Replacement oestrogen therapy |
| B | Megestrol |
| C | Reassurance |
| D | Soy products |
| E | Green tea |

33423

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Question 83 of 102

11

Explanation

A Replacement oestrogen therapy

C	Reassurance
---	-------------

D	Soy products
---	--------------

E	Green tea
---	-----------

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Difficulty: Average

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Session Progress

Responses Correct:	0
Responses Incorrect:	83
Responses Total:	83
Responses - % Correct:	0%

Back to Filters

Question 84 of 102

A 22-year-old male student complains of increasing shortness of breath, severe backache, weight loss and bilateral supraclavicular adenopathy. He has a past history of an undescended left testicle which was corrected by surgery as a child. On examination there is evidence of bilateral supraclavicular lymphadenopathy and a large mass in the left inguinal area. A chest X-ray shows multiple coin lesions. An abdominal computerised tomography (CT) scan shows left-sided paravertebral lymph nodes and a large retroperitoneal mass behind the pancreas. A biopsy of the inguinal mass is arranged.

What other diagnostic test would be most helpful in determining the nature of the mass?

- A

LDH
- B

CEA
- C

Ca 19-9
- D

Ca 125
- E

Alpha-fetoprotein

33424

Submit

Previous Question

Skip Question

Calculator

Normal Values

Back to Filters

Question 84 of 102

A 22-year-old male student complains of increasing shortness of breath, severe backache, weight loss and bilateral supraclavicular adenopathy. He has a past history of an undescended left testicle which was corrected by surgery as a child. On examination there is evidence of bilateral supraclavicular lymphadenopathy and a large mass in the left inguinal area. A chest X-ray shows multiple coin lesions. An abdominal computerised tomography (CT) scan shows left-sided paravertebral lymph nodes and a large retroperitoneal mass behind the pancreas. A biopsy of the inguinal mass is arranged.

What other diagnostic test would be most helpful in determining the nature of the mass?

- A

LDH
- B

CEA
- C

Ca 19-9
- D

Ca 125
- E

Alpha-fetoprotein

Explanation

⚙

E

Alpha-fetoprotein

Testicular cancer primarily affects young men in the 20-44-year-old age group, where it is the most common cancer. Clinical presentation of testicular cancer varies considerably. Among serum tumour markers, elevated levels of a-fetoprotein (AFP) are seen with non-seminomatous germ cell tumours. bHCG is raised in the case of seminomatous germ cell tumours.

A

LDH

Lactate dehydrogenase (LDH) is a marker of tumour bulk in solid cancers, e.g. lymphoma and testicular cancer, and is of prognostic significance, although it isn't specific for the underlying tumour type.

B

CEA

Carcino-embryonic antigen (CEA) is a non-specific marker used to monitor colorectal malignancies.

C

Ca 19-9

Cancer antigen 19-9 (Ca19-9) is often raised in pancreatic cancer, although it is used to monitor for recurrence rather than for making the initial diagnosis.

D

Ca 125

Cancer antigen 125 (Ca 125) is associated with ovarian and peritoneal tumours, and is not of value therefore in evaluating testicular cancer.

33424

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Average

Peer Responses %

Session Progress

Responses Correct:	0
Responses Incorrect:	84
Responses Total:	84
Responses - % Correct:	0%

Back to Filters

Question 85 of 102

A 65-year-old man is urgently referred by his GP to the local gastroenterology department with a history of dysphagia, postprandial fullness, loss of appetite and weight loss. He reports that he has been fit and well until a few months ago when his symptoms started and he is not taking any medication. He is a non-smoker. On examination, he is noted to have lost weight and is anaemic. Other positive findings include an enlarged palpable stomach with a succussion splash, an enlarged liver and an enlarged left supraclavicular node.

Which of the following investigations is likely to be most useful in this patient?

- | | |
|---|------------------------------------|
| A | HLA typing |
| B | LDH levels |
| C | <i>pylori</i> breath test |
| D | Plain abdominal X-ray |
| E | Oesophago-gastroduodenoscopy (OGD) |

33425

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Question 85 of 102

Which of the following investigations is likely to be most useful in this patient?

- in

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End Session

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Responses Correct:	0
Responses Incorrect:	85
Responses Total:	85
Responses - % Correct:	0%

Question 86 of 102

Investigations:

What most appropriate further investigation/s should be done next to make the diagnosis?

Skip Question

Back to Filters

Question 86 of 102

A 60-year-old gentleman complains of progressive breathlessness on walking up stairs and weight loss of 1 stone in the last 6 months. He has had long-standing obstructive urinary symptoms over the past 3-4 years. He has experienced some vague generalised abdominal pains and denies any change in bowel symptoms. He is a non-smoker.

Investigations:

Hb	8.5 g/l
MCV	65 fl
Ferritin	15-16 μg/l
Total Iron Binding Capacity (TIBC)	450 mg/dl (200-400 mg/dl)
Urine dipstick	Blood-, protein-

What most appropriate further investigation/s should be done to make the diagnosis?

- A

Bone marrow trephine
- B

Cystoscopy
- C

Colonscopy and upper gastrointestinal endoscopy
- D

Barium enema
- E

Haemoglobin electrophoresis

Explanation

⚙

C

Colonscopy and upper gastrointestinal endoscopy

A man of any age with an unexplained iron deficiency anaemia and a haemoglobin of 11 g/100 ml or below should be urgently referred for a upper gastrointestinal (GI) endoscopy and colonoscopy to exclude an upper or lower gastrointestinal malignancy. The absence of symptoms raises the possibility of a right-sided colonic tumour.

Faecal occult blood (FOB) test on stool is a means of screening for lower GI malignancies. A false negative may be caused by ingestion of large doses of vitamin C or by not collecting multiple samples, as many conditions only bleed intermittently. False-positive results may arise as a consequence of other causes of bleeding, other sources of haemoglobin, such as eating red meat, or by ingesting substances that will react with the test such as fish, turnips, horseradish or oxidising drugs.

A

Bone marrow trephine

This is a potentially unpleasant and unnecessary procedure, and given that ferritin is low, chronic blood loss should be excluded first before considering other explanations for anaemia.

B

Cystoscopy

There is no blood on the urine dipstick, and whilst this doesn't exclude intermittent blood loss from the GU tract, GI tract blood loss should be excluded first.

D

Barium enema

Barium enema is less sensitive than colonoscopy with respect to pick-up of any underlying malignant polyp. As such, colonoscopy is preferred here.

E

Haemoglobin electrophoresis

Although sickle cell trait is a possible cause of microcytic anaemia, the vague abdominal pains and low ferritin point us towards blood loss as the more likely cause of the presentation here.

33426

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Next Question

Previous Question

Tag Question

Feedback

End Session

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Session Progress

Responses Correct:	0
Responses Incorrect:	86
Responses Total:	86
Responses - % Correct:	0%

Back to Filters

Question 87 of 102

A 65-year-old patient was found to have a colonic carcinoma invading through the muscularis propria, with five regional nodes involved.

With optimal treatment, what is the likely 5-year survival for this patient?

- | | |
|---|-----|
| A | <5% |
| B | 60% |
| C | 20% |
| D | 80% |
| E | 95% |

33427

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Back to Filters

Question 87 of 102

A 65-year-old patient was found to have a colonic carcinoma invading through the muscularis propria, with five regional nodes involved.

With optimal treatment, what is the likely 5-year survival for this patient?

- A

<5%
- B

60%
- C

20%
- D

80%
- E

95%

Explanation

⚙

B

60%

The Dukes staging system is widely employed for classifying colorectal cancers and is a useful predictor of survival. Tumour grade and depth of penetration are also important. Duke A (stage I) defines a tumour confined to the bowel wall (i.e. mucosa and submucosa). Duke B (stage II) invades through the muscle wall. Duke C (stage III) involves lymph nodes. After this the patient presents with metastatic disease at distant sites (stage IV). Prognosis after resection is related not only to regional lymph node involvement but also to the number of involved nodes. The prognosis for patients with colorectal cancer is more favourable when tumour specimens reveal involvement of one to four lymph nodes than when they reveal five or more involved nodes. According to most recent cancer survival statistics, Dukes C, the classification here, now has survival rates which approach 60%.

A

<5%

Approximately 5% survival rates at 5 years are seen for patients with stage IV disease who have metastatic disease at distant sites.

C

20%

20% is the 5-year survival rate for colon cancer where the stage isn't known/is unclassified in UK mortality statistics. It's likely to represent patients presenting with mainly late stage disease.

D

80%

This is the 5-year survival rate for Dukes B (stage II) disease where cancer has invaded through the muscle wall only.

E

95%

This would be the survival rate at 5 years for Dukes A (stage I) disease where there is tumour confined to the bowel wall only.

33427

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Next Question

Previous Question

Tag Question

Feedback

End Session

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Session Progress

Responses Correct:	0
Responses Incorrect:	87
Responses Total:	87
Responses - % Correct:	0%

Question 88 of 102

Investigations:

Na ⁺	135 mmol/l
K ⁺	4.5 mmol/l
Creatinine	120 μmol/l
Urea	8.0 mmol/l
Albumin	28 g/l
ALP	165 U/l (20-120 U/l)
PTH	5 pg/ml (10-65 pg/ml)

11

- | | |
|---|---|
| A | Lytic bony metastases |
| B | Parathyroid-related peptide-associated hypercalcaemia |
| C | Primary hyperparathyroidism |
| D | Hypoparathyroidism |
| E | Secondary hyperparathyroidism |

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[Previous Question](#)

Skip Question

Calculator

Normal Values

Question 88 of 102

Investigations:

Na ⁺	135 mmol/l
K ⁺	4.5 mmol/l
Creatinine	120 μmol/l
Urea	8.0 mmol/l
Albumin	28 g/l
ALP	165 U/l (20-120 U/l)
PTH	5 pg/ml (10-65 pg/ml)

- | | |
|---|---|
| A | Lytic bony metastases |
| B | Parathyroid-related peptide-associated hypercalcaemia |
| C | Primary hyperparathyroidism |
| D | Hypoparathyroidism |
| E | Secondary hyperparathyroidism |

- | | |
|---|---|
| B | Parathyroid-related peptide-associated hypercalcaemia |
|---|---|

Treatment is aimed at reducing the tumour burden (chemotherapy or radiotherapy), reducing osteoclastic resorption of the bone (bisphosphonates) and increasing urinary calcium excretion (diuretics with careful attention to fluid balance).

- A Lytic bony metastases

C	Primary hyperparathyroidism
---	-----------------------------

- Primary hyperparathyroidism is effectively excluded here by the low PTH in the presence of hypercalcaemia.

D Hypoparathyroidism

Hypoparathyroidism is of course associated with hypocalcaemia, not with elevated levels of serum calcium.

- E Secondary hyperparathyroidism

The low PTH and relatively normal renal function effectively rule this out as the cause of hypercalcaemia.

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Next Question

[Previous Question](#)

Tag Question

Feedback

End Session

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Session Progress

Responses Correct:	0
Responses Incorrect:	88
Responses Total:	88
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Back to Filters

Question 89 of 102

A 35-year-old woman is worried because her mother developed breast cancer at 45 years of age, as did both maternal aunts at the ages of 48 and 52. She presents to the cancer genetics clinic for review. She has no past medical history of note, menarche was at age 13 and she is of normal body weight.

Which of the following genetic mutations would you expect to find on testing?



A	BRCA1
B	BRCA2
C	P53
D	No known mutation identified
E	pTEN

33429

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Back to Filters

Question 89 of 102

A 35-year-old woman is worried because her mother developed breast cancer at 45 years of age, as did both maternal aunts at the ages of 48 and 52. She presents to the cancer genetics clinic for review. She has no past medical history of note, menarche was at age 13 and she is of normal body weight.

Which of the following genetic mutations would you expect to find on testing?

- A BRCA1
- B BRCA2
- C P53
- D No known mutation identified
- E pTEN

Explanation Settings icon

- D No known mutation identified

The majority of breast cancer is sporadic. Genetic breast cancer occurs in women with an alteration in a breast cancer susceptibility gene, which has been inherited through the germline. Familial breast cancer occurs in women and is associated with both ovarian and pancreatic cancer. Some susceptibility genes for breast cancer have been identified. These include BRCA1, BRCA2, p53 and pTEN. Most genetic susceptibility, however, is as a consequence of as yet undetermined genes or those of low penetrance. NICE recommends referral to a specialist clinic when the following conditions are met:

1. mother or sister diagnosed with breast cancer before the age of 40 years
2. close relatives from the same side of the family diagnosed with breast cancer - at least one must be a mother, sister or daughter
3. three close relatives diagnosed with breast cancer at any age
4. father or brother diagnosed with breast cancer at any age
5. mother or sister with breast cancer in both breasts - the first cancer diagnosed before the age of 50 years
6. one close relative with ovarian cancer and one with breast cancer, diagnosed at any age - at least one must be a mother, sister or daughter.

- A BRCA1

BRCA1 is associated with breast and ovarian cancer due to a defect in a DNA repair gene. The absence of any history of ovarian cancer counts against BRCA1, as does the relatively older age at presentation of her relatives.

- B BRCA2

Like BRCA1, BRCA2 is associated with the development of breast and ovarian cancer at a young age. The age at presentation and lack of ovarian disease counts against a BRCA2 mutation being present.

- C P53

P53 mutations are associated with a range of cancers including breast cancer; the absence of other tumours being seen here counts against a P53 mutation as the cause.

- E pTEN

pTEN mutations lead to defective tumour suppression and result in breast cancer, but usually as part of Cowden syndrome with endometrial and thyroid cancer.

33429

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Next Question

Previous Question

Feedback

Tag Question

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Session Progress

Responses Correct:	0
Responses Incorrect:	89
Responses Total:	89
Responses - % Correct:	0%

External Links

Familial breast cancer
[nice.org.uk/guidance/cg164/chapter/Recommendations#clinical-significance-of-a-fa...](#)

Back to Filters

Question 90 of 102

A 75-year-old gentleman presents with weight loss and polyuria. He has had some vague lower abdominal and upper back pain for several months. He has smoked 10 cigarettes per day all his life and drinks occasionally. He has taken tamsulosin 0.4 mg for the last few years for obstructive urinary symptoms. On examination he is pale and thin. There are fine crackles at both lung bases. There is no hepatosplenomegaly or lymph node enlargement.

Investigations:

Hb	11.0 g/dl
WCC	3.5 × 10 ⁹ /l
PLT	100 × 10 ⁹ /l
Na ⁺	138 mmol/l
K ⁺	3.6 mmol/l
Creatinine	140 mol/l
ESR	60 mm/1 st h
Urea	10.0 mmol/l
Corrected Ca ²⁺	3.2 mmol/l
Phosphate	1.3 mmol/l (0.75–1.5 mmol/l)
ALP	205 U/l
Albumin	35 g/l
TP	60 g/l (65–75 g/l)
Blood film	Occasional nucleated red blood cells and myelocytes

What best describes the features suggested on the blood film?

- A

Rouleaux formation
- B

Leuco-erythroblastic anaemia
- C

Sideroblastic anaemia
- D

Smudge cells
- E

Right shift

33430

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Previous QuestionSkip Question

Calculator

Normal Values

Back to Filters

Question 90 of 102

A 75-year-old gentleman presents with weight loss and polyuria. He has had some vague lower abdominal and upper back pain for several months. He has smoked 10 cigarettes per day all his life and drinks occasionally. He has taken tamsulosin 0.4 mg for the last few years for obstructive urinary symptoms. On examination he is pale and thin. There are fine crackles at both lung bases. There is no hepatosplenomegaly or lymph node enlargement.

Investigations:

Hb	11.0 g/dl
WCC	3.5 × 10 ⁹ /l
PLT	100 × 10 ⁹ /l
Na+	138 mmol/l
K+	3.6 mmol/l
Creatinine	140 mol/l
ESR	60 mm/1 st h
Urea	10.0 mmol/l
Corrected Ca ²⁺	3.2 mmol/l
Phosphate	1.3 mmol/l (0.75–1.5 mmol/l)
ALP	205 U/l
Albumin	35 g/l
TP	60 g/l (65–75 g/l)
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- A

Rouleaux formation
- B

Leuco-erythroblastic anaemia
- C

Sideroblastic anaemia
- D

Smudge cells
- E

Right shift

Explanation

- B

Leuco-erythroblastic anaemia

The blood film is suggestive of leuco-erythroblastic anaemia. This is defined when there are immature cells (e.g. myelocytes and nucleated red blood cells) seen on the peripheral blood film. Causes include:

- myelofibrosis
- malignant marrow infiltration
- chronic myeloid leukaemia
- myeloma
- polycythaemia rubra vera
- osteopetrosis
- tuberculous infiltration of the bone marrow
- sarcoidosis.

The blood results also demonstrate a significantly raised calcium level. Cancer-induced hypercalcaemia, associated with bone metastases, arises as a consequence of increased bone resorption with calcium mobilisation into the extracellular fluid. There is an associated rise in alkaline phosphatase and reduction in the levels of parathyroid hormone (PTH). The blood picture seen therefore fits with disseminated carcinoma.

- A

Rouleaux formation

Rouleaux is seen when red cells aggregate due to increased plasma proteins and elevated ESR. This is seen in haematological malignancies such as myeloma.

- C

Sideroblastic anaemia

Sideroblasts are erythroblasts with atypical nuclei, which occur because of defective iron incorporation into cells. This may be congenital or is seen in myelodysplastic syndromes.

- D

Smudge cells

Smudge cells are remnants of white cells that lack any identifiable cytoplasmic membrane or nuclear structure. Smudge cells, also known as basket cells, are most often associated with abnormally fragile lymphocytes in disorders such as chronic lymphocytic leukaemia (CLL).

- E

Right shift

A right shift is characterised by a lack of immature neutrophils and is associated with suppression of bone marrow activity: it is in effect the opposite of what is seen here.

33430

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Average

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Session Progress

Responses Correct:	0
Responses Incorrect:	90
Responses Total:	90
Responses - % Correct:	0%

Back to Filters

Question 91 of 102

A 65-year-old man with known adult-onset polycystic kidney disease presents with gradual worsening shortness of breath and lethargy. A chest X-ray is performed that shows multiple coin lesions throughout both lung fields.

Investigations:

Hb	17.3 g/dl
WCC	$7.2 \times 10^9/l$
PLT	$300 \times 10^9/l$
Urea	40 mmol/l
Creatinine	$390 \mu\text{mol/l}$

What investigation is the most appropriate next step?

- A

Bronchoscopy
- B

Mediastinoscopy
- C

Transthoracic lung biopsy
- D

CT abdomen and thorax
- E

Sputum cytology

33431

Submit

Previous Question

Skip Question

Calculator

Normal Values

Question 91 of 102

Investigations:

Hb	17.3 g/dl
WCC	$7.2 \times 10^9/\text{l}$
PLT	$300 \times 10^9/\text{l}$
Urea	40 mmol/l
Creatinine	390 $\mu\text{mol/l}$

What investigation is the most appropriate next step?

- | | |
|---|---------------------------|
| A | Bronchoscopy |
| B | Mediastinoscopy |
| C | Transthoracic lung biopsy |
| D | CT abdomen and thorax |
| E | Sputum cytology |

Explanation



- | | |
|---|-----------------------|
| D | CT abdomen and thorax |
|---|-----------------------|

A	Bronchoscopy
---	--------------

B	Mediastinoscopy
---	-----------------

C	Transthoracic lung biopsy
---	---------------------------

E	Sputum cytology
---	-----------------

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[Previous Question](#)

Tag Question

Feedback

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Session Progress

Responses Correct:	0
Responses Incorrect:	91
Responses Total:	91
Responses - % Correct:	0%

Question 92 of 102

Investigations:

11

11

Submit

Skip Question

Question 92 of 102

Investigations:

Na ⁺	145 mmol/l
K ⁺	4.1 mmol/l
Urea	10.6 mmol/l
Ca ²⁺	3.1 mmol/l
Phosphate	0.4 mmol/l

- | | |
|---|---|
| A | Extra-adrenal pheochromocytoma |
| B | Small-cell lung cancer |
| C | Multiple endocrine neoplasia (MEN) type 1 |
| D | Multiple endocrine neoplasia (MEN) type 2 |
| E | Zollinger-Ellison syndrome |

- | | |
|---|---|
| D | Multiple endocrine neoplasia (MEN) type 2 |
|---|---|

There are two forms of MEN II, A and B. Patients with MEN2A and MEN2B experience two main complications, medullary thyroid cancer (MTC) and pheochromocytoma. MEN2A patients have a predisposition to hypertrophy of the parathyroid glands and subsequent tumour development. MEN2B patients show a variety of additional conditions: a characteristic facial appearance with swollen lips; tumours of the mucous membranes of the eye, mouth, tongue and nasal cavity; enlarged colon; and skeletal abnormalities. MEN2A shows no distinct physical features and must be identified by either measuring hormone levels or finding endocrine tumours.

- A Extra-adrenal pheochromocytoma

Although this may explain the hypertension seen here, it wouldn't explain the hypercalcaemia.

- B Small-cell lung cancer

Small cell lung cancer is associated with the production of ectopic ACTH, leading to features of hypercortisolism. Although hypertension may be a feature, the lack of significant weight gain or dysglycaemia and the modest smoking history count against this.

- C Multiple endocrine neoplasia (MEN) type 1

MEN1 is associated with pancreatic endocrine tumours, not with pheochromocytoma.

- E Zollinger-Ellison syndrome

This is the syndrome of hypergastrinaemia and recurrent peptic ulceration related to a gastrinoma

33432

[Next Question](#)

[Previous Question](#)

Tag Question

Feedback

End Session

Difficulty: Average

Peer Responses %

Session Progress

Responses Correct:	0
Responses Incorrect:	92
Responses Total:	92
Responses - % Correct:	0%

Back to Filters


Question 93 of 102

An 85-year-old lady with metastatic small cell lung cancer was discharged home on regular oral morphine sulphate for pain relief. She had originally found good relief from the medication but after several weeks required readmission because her pain was again poorly controlled. She had taken her medication as prescribed. During admission she developed hospital-acquired pneumonia and deteriorated, developing respiratory failure and an impaired Glasgow Coma scale. She remained in considerable discomfort.

Which of the following statements is correct with respect to her resuscitation status?

- A

A form used some 2 months ago to elucidate her preferred treatment options could be used here


- B

Where death is expected, relatives must be asked for permission not to resuscitate
- C

Once a decision is made not to resuscitate, anything that might prolong life must also be discontinued
- D

Relatives have the right to demand resuscitation
- E

Once a decision about resuscitation is made, it cannot be altered later

33434

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Previous QuestionSkip Question

Calculator

Normal Values

Back to Filters

Question 93 of 102

An 85-year-old lady with metastatic small cell lung cancer was discharged home on regular oral morphine sulphate for pain relief. She had originally found good relief from the medication but after several weeks required readmission because her pain was again poorly controlled. She had taken her medication as prescribed. During admission she developed hospital-acquired pneumonia and deteriorated, developing respiratory failure and an impaired Glasgow Coma scale. She remained in considerable discomfort.

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- A

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≡
- B

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- C

Once a decision is made not to resuscitate, anything that might prolong life must also be discontinued
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Relatives have the right to demand resuscitation
- E

Once a decision about resuscitation is made, it cannot be altered later

Explanation ⚙

- A

A form used some 2 months ago to elucidate her preferred treatment options could be used here

Where possible, any treatment options with respect to end of life care should be discussed at the time with the patient. In this case, however, this isn't possible, although the discussion from some 2 months ago is likely to represent the closest approximation to her wishes. As such, the form can be used to guide decisions regarding resuscitation.

- B

Where death is expected, relatives must be asked for permission not to resuscitate

At this stage it's expected, as a health care professional, that you will take any relatives through the reasons for your discussion, the consultation with the relatives being used to inform and guide in the best interests of the patient.

- C

Once a decision is made not to resuscitate, anything that might prolong life must also be discontinued

Although a decision not to resuscitate may have been made, treatments which allow an improvement in the patient's condition, potentially allowing them to return home for a while or to a hospice, may of course be considered.

- D

Relatives have the right to demand resuscitation

Although the course of action should ideally be agreed with relatives, you are only under an obligation to act in the patient's best wishes, not to carry out the demands of any relatives.

- E

Once a decision about resuscitation is made, it cannot be altered later

Often a review date is set on such decisions, to allow status to be reassessed - for example, once an acute episode of sepsis is over.

33434

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Average

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Session Progress

Responses Correct:	0
Responses Incorrect:	93
Responses Total:	93
Responses - % Correct:	0%

Question 94 of 102

Investigations:

His chest X-ray is shown below.



A	Squamous cell carcinoma
B	Alveolar cell carcinoma
C	Small cell carcinoma
D	Bronchial carcinoid
E	Adenocarcinoma

Submit

Skip Question

Back to Filters

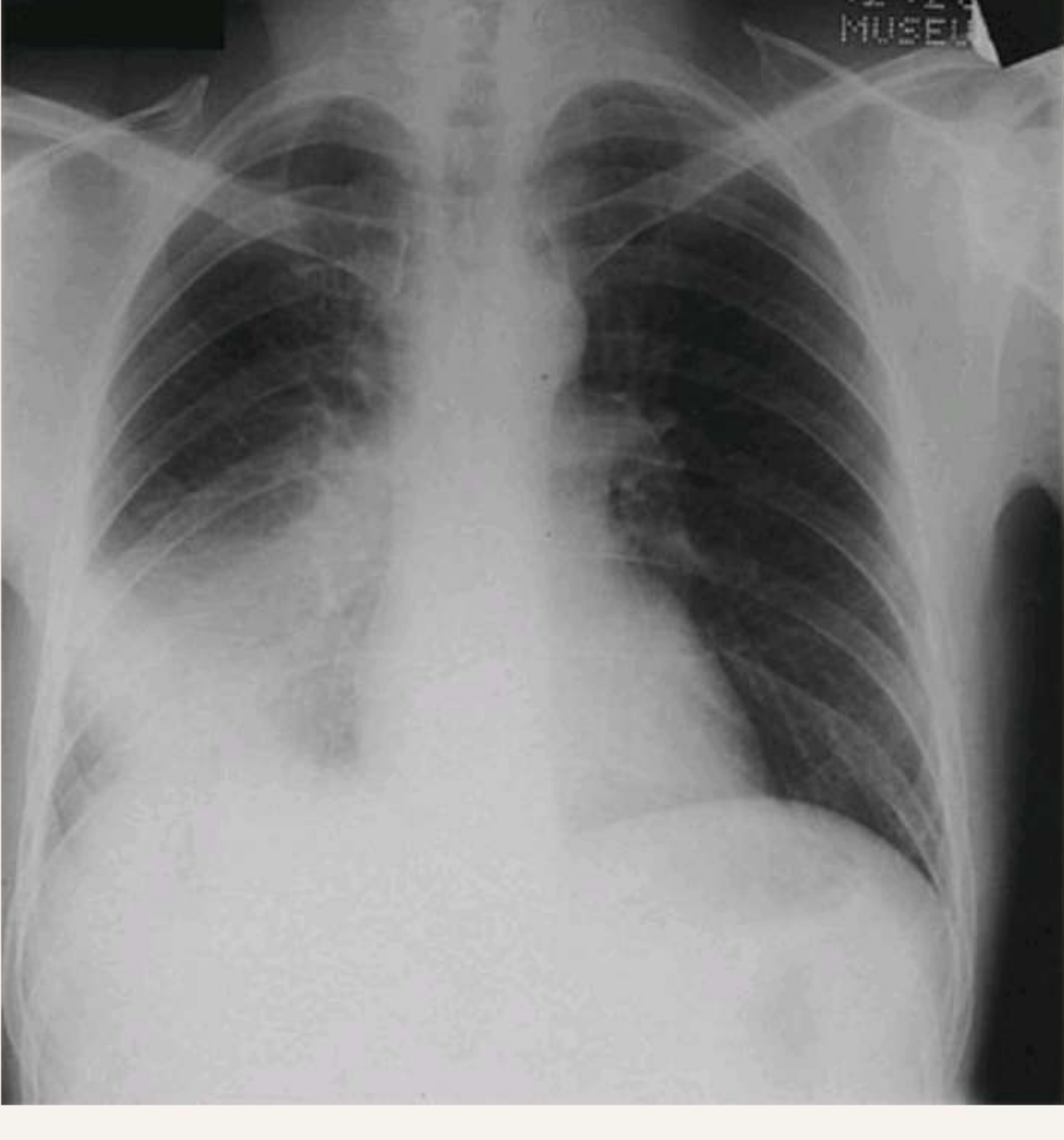
Question 94 of 102

A 52-year-old man who smokes 50 cigarettes per day complains to his GP of chronic cough, which has worsened recently, and his sputum is now yellow green in colour and blood-stained. He has lost approximately 2 kg in weight over the past 4 months.

Investigations:

Hb	10.9 g/dl
WCC	$10.1 \times 10^9/l$
PLT	$175 \times 10^9/l$
Na ⁺	140 mmol/l
K ⁺	5.0 mmol/l
Creatinine	140 mol/l
Ca ²⁺	2.85 mmol/l
Plasma viscosity	2.14 mPa/s (1.5-1.72)
CRP	45 mg/l

His chest X-ray is shown below.



Which of the following is the most likely underlying diagnosis?

- A Squamous cell carcinoma
- B Alveolar cell carcinoma
- C Small cell carcinoma
- D Bronchial carcinoid
- E Adenocarcinoma

Explanation



- A Squamous cell carcinoma

Squamous cell bronchial carcinoma is most commonly associated with hypercalcaemia. The chest X-ray, raised viscosity and hypercalcaemia, coupled with cough and haemoptysis, point towards a neoplasm as the most likely diagnosis. Hypercalcaemia is usually due to production of parathyroid hormone-related protein (PTHrp) by the tumour. Treatment of symptomatic hypercalcaemia is with IV rehydration, corticosteroids and IV bisphosphonates. His underlying tumour is best elucidated with a combination of CT and transbronchial biopsy to gain a tissue diagnosis.

- B Alveolar cell carcinoma

Alveolar cell carcinoma originates from non-endocrine cells, and hence an alveolar cell carcinoma couldn't account for the hypercalcaemia seen here.

- C Small cell carcinoma

Some small cell lung cancers secrete ADH and ACTH, leading to the development of either SIADH or features of Cushing syndrome.

- D Bronchial carcinoid

Bronchial carcinoid occurs as a single vascular tumour, and is associated with recurrent haemoptysis and pneumonia. It isn't associated with smoking.

- E Adenocarcinoma

These tumours are not hormone secreting and therefore cannot account for the hypercalcaemia seen here.

33435

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Next Question

Previous Question

Tag Question

Feedback

End Session

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Session Progress

Responses Correct:	0
Responses Incorrect:	94
Responses Total:	94
Responses - % Correct:	0%

Back to Filters

Question 95 of 102

A 37-year-old is referred to the Emergency Department with extreme tiredness such that she is unable to cope. She has progressive shortness of breath, nausea and anorexia which has worsened significantly over the past 6 weeks. She has lost 5kg in weight over the past 6 months. On examination her BP is 100/60 mmHg, pulse is 90/min and regular. She looks pale. Her abdomen is distended, her chest is dull to percussion at the left base and there are decreased breath sounds.

Investigations:

Hb	9.9 g/dl
WCC	11.2 x10 ⁹ /l
PLT	178 x10 ⁹ /l
Na ⁺	138 mmol/l
K ⁺	5.3 mmol/l
Creatinine	139 micromol/l
ALT	312 U/l
Bilirubin	35 micromol/l
ALP	285 U/l
INR	1.2
USS liver	multiple metastases of unknown origin
CXR	Left pleural effusion

Which of the following is the optimal next step?

- A

Referral to palliative care
- B

Liver biopsy
- C

Pleural biopsy under image guidance
- D

Blood transfusion
- E

Blind pleural aspiration

36465

Submit

Previous Question

Skip Question

Calculator

Normal Values

Question 95 of 102

Investigations:

3

1

- ## Explanation



- This young 37 year old patient presents with disseminated metastatic malignancy of unknown origin.

The optimal approach is to obtain a tissue diagnosis and the question debates which is the best route to diagnostic certainty – pleural biopsy under image guidance is the least invasive approach

- It may be appropriate but the single most important next management step is ascertaining diagnostic certainty.

- The least invasive method, with the lowest associated procedural risks will be preferred and thus pleural biopsy is considered to be the best option rather than a liver biopsy which is associated with a higher morbidity and mortality rate.

- It is not indicated with a haemoglobin of 9.9 g/dl.

- It is no longer considered to be good practice unless the patient is in an emergent situation. Furthermore, pleural fluid cytology has a sensitivity of approximately 60% compared with 90-95% with image guided pleural biopsy.

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Next Question

[Previous Question](#)

Tag Question

Feedback

End Session

Difficulty: Average

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Session Progress

Question 96 of 102

Investigations:

Hb	14.1 g/dl
WCC	8.9 x10 ⁹ /l
PLT	258 x10 ⁹ /l
Na ⁺	138 mmol/l
K ⁺	3.5 mmol/l
Creatinine	132 micromol/l
Glucose	15.1 mmol/l

-
-
-

- | | |
|---|--|
| A | Proceed directly to trans-sphenoidal resection |
| B | Start Mitotane |
| C | Start Ketoconazole |
| D | Pituitary radiotherapy |
| E | Proceed directly to adrenalectomy |

Submit

[Previous Question](#)

Skip Question

Calculator

Normal Values

Back to Filters

Question 96 of 102

A 43-year-old man is reviewed in the Endocrinology Clinic and given a diagnosis of Cushing’s disease with a 0.9cm pituitary adenoma. He has multiple medical problems including severe hypertension currently managed with 3 agents, poorly controlled diabetes mellitus and morbid obesity. On examination his BP is 166/95 mmHg, pulse is 75/min and regular. His BMI is 38. He has bilateral lower limb swelling with severe varicose veins.

Investigations:

Hb	14.1 g/dl
WCC	8.9 x10 ⁹ /l
PLT	258 x10 ⁹ /l
Na ⁺	138 mmol/l
K ⁺	3.5 mmol/l
Creatinine	132 micromol/l
Glucose	15.1 mmol/l

Which of the following is the most appropriate next step?



- A

Proceed directly to trans-sphenoidal resection
- B

Start Mitotane
- C

Start Ketoconazole
- D

Pituitary radiotherapy
- E

Proceed directly to adrenalectomy

Explanation



- C

Start Ketoconazole

This patient has severe Cushing’s with multiple complications including poorly controlled hypertension, diabetes and obesity. As such he is at significant operative risk. Ketoconazole is an effective agent for control of cortisol synthesis prior to surgery. It acts on several of the P450 enzymes, including the first step in cortisol synthesis, cholesterol side-chain cleavage, and conversion of 11-deoxycortisol to cortisol. A daily dose of 600-800 mg often decreases cortisol production significantly and will help in controlling blood sugar and blood pressure before moving to pituitary surgery.

- A

Proceed directly to trans-sphenoidal resection

Whilst this is the preferred option given the presence of a pituitary adenoma, the patient is a high operative risk given his co-morbidities of severe hypertension, poorly controlled diabetes and morbid obesity making this option not the best of those available.

- B

Start Mitotane

Mitotane is used in the treatment of adrenal cancer, rather than in the treatment of pituitary adenoma or Cushing’s.

- D

Pituitary radiotherapy

Pituitary radiotherapy is considered in patients who have persistently raised ACTH but this is usually reserved for patients who have undergone surgery.

- E

Proceed directly to adrenalectomy

Firstlyhe patient is too high an operative risk given his multiple medical problems. Secondly, the patient does not have a adrenal adenoma requiring adrenalectomy. The mechanism for ACTH production is via the pituitary adenoma.

36478

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Next Question

Previous Question	Tag Question
Feedback	End Session

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Responses Correct:	0
Responses Incorrect:	96
Responses Total:	96
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Back to Filters

Question 97 of 102

A 71-year-old man is found to be anaemic on routine testing when he changes to a new General Practitioner. He has hypertension which is treated with Lisinopril and Amlodipine, but nil else of note. On examination his BP is 132/72, pulse is 85 and regular. There is mild bilateral pitting oedema of the ankles.

Investigations:

Hb	10.8 g/dl
WCC	11.1 x10 ⁹ /l
PLT	187 x10 ⁹ /l
Na ⁺	138 mmol/l
K ⁺	4.3 mmol/l
Creatinine	105 micromol/l
Albumin	28 g/l
Total protein	61 g/l

Which of the following would fit best with a diagnosis of symptomatic myeloma?



- A

Creatinine 105 micromol/l
- B

Femoral and lumbar spine lytic lesions on skeletal survey
- C

Hb of 10.8 g/dl
- D

8% clonal plasma cells on bone marrow sampling
- E

Urine negative for protein

36565

Submit

Previous QuestionSkip Question

Calculator✔

Normal Values✔

Back to Filters

Question 97 of 102

A 71-year-old man is found to be anaemic on routine testing when he changes to a new General Practitioner. He has hypertension which is treated with Lisinopril and Amlodipine, but nil else of note. On examination his BP is 132/72, pulse is 85 and regular. There is mild bilateral pitting oedema of the ankles.

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Hb of 10.8 g/dl
- D

8% clonal plasma cells on bone marrow sampling
- E

Urine negative for protein

Explanation



- B

Femoral and lumbar spine lytic lesions on skeletal survey

Criteria for diagnosis of symptomatic myeloma were drawn up in 2003 and are listed below:

Symptomatic myeloma diagnosis criteria:

- Monoclonal protein in serum and/or urine
- Bone marrow (clonal) plasma cells or biopsy proven plasmacytoma
- Any evidence of myeloma-related organ or tissue impairment (including bone lesions): (a) hypercalcaemia, (b) renal insufficiency attributable to myeloma, (c) anaemia (Hb <10g/dl) or (d) bony lesions (lytic lesions or osteoporosis with compression fractures).

- A

Creatinine 105 micromol/l

It is within the normal range and thus would be unusual in symptomatic myeloma.

- C

Hb of 10.8 g/dl

It would be insufficient to meet the diagnostic criteria for symptomatic myeloma.

- D

8% clonal plasma cells on bone marrow sampling

This is more consistent with monoclonal gammopathy of unknown significance – in myeloma, the clonal plasma cells should be >10% on bone marrow biopsy.

- E

Urine negative for protein

Proteinuria is a feature of symptomatic multiple myeloma.

36565

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Next Question

- Previous Question

Tag Question
- Feedback

End Session

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Responses Incorrect:	97
Responses Total:	97
Responses - % Correct:	0%

Back to Filters

Question 98 of 102

A 62-year-old woman is undergoing cycles of chemotherapy with a Paclitaxel and Trastuzumab based regime. As per guidance she is monitored after every cycle of chemotherapy for changes in her ejection fraction. After the second cycle she develops increased shortness of breath and reduced exercise tolerance. Ejection fraction has reduced from 54% at baseline to 40%.

Which of the following is the most appropriate next step?



- | | |
|---|-------------------------------------|
| A | Start Bisoprolol |
| B | Start Furosemide |
| C | Start Ramipril |
| D | Start Valsartan |
| E | Temporarily discontinue Trastuzumab |

36566

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Back to Filters

Question 98 of 102

A 62-year-old woman is undergoing cycles of chemotherapy with a Paclitaxel and Trastuzumab based regime. As per guidance she is monitored after every cycle of chemotherapy for changes in her ejection fraction. After the second cycle she develops increased shortness of breath and reduced exercise tolerance. Ejection fraction has reduced from 54% at baseline to 40%.

Which of the following is the most appropriate next step?

- A

Start Bisoprolol
- B

Start Furosemide
- C

Start Ramipril
- D

Start Valsartan
- E

Temporarily discontinue Trastuzumab

Explanation

Guidance from the prescribing information on Trastuzumab is clear, that it should be discontinued when there is a 10% or worse deterioration in ejection fraction. The statement from the PI is reproduced below:

”If LVEF drops 10 ejection fraction (EF) points from baseline AND to below 50 %, treatment should be suspended and a repeat LVEF assessment performed within approximately 3 weeks. If LVEF has not improved, or declined further, discontinuation of Herceptin should be strongly considered, unless the benefits for the individual patient are deemed to outweigh the risks. All such patients should be referred for assessment by a cardiologist and followed up”

The her2 receptor is thought to play a key role in protection from the development of cardiomyopathy. As such antagonising her2 with TTrastuzumab significantly increases the risk of development of cardiomyopathy.

36566

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Next Question

Previous Question

Feedback

Tag Question

End Session

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Session Progress

Responses Correct:	0
Responses Incorrect:	98
Responses Total:	98
Responses - % Correct:	0%

Back to Filters

Question 99 of 102

A 45-year-old woman previously in good health is referred by the gynaecologists with a new diagnosis of stage III ovarian carcinoma after presenting to the GP with progressive bloating and abdominal pain over the previous 4 months. She undergoes a hysterectomy and bilateral salpingo-oophorectomy (BSO), and is referred for chemotherapy.

Which of the following is the usual first line chemotherapy regimen?



- | | |
|---|-----------------------------|
| A | Gemcitabine and carboplatin |
| B | Paclitaxel and Cisplatin |
| C | Single agent Carboplatin |
| D | Single agent Topotecan |
| E | Single agent Caelyx |

36567

Submit

Previous QuestionSkip Question

Calculator

Normal Values

Back to Filters

Question 99 of 102

A 45-year-old woman previously in good health is referred by the gynaecologists with a new diagnosis of stage III ovarian carcinoma after presenting to the GP with progressive bloating and abdominal pain over the previous 4 months. She undergoes a hysterectomy and bilateral salpingo-oophorectomy (BSO), and is referred for chemotherapy.

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- A

Gemcitabine and carboplatin
- B

Paclitaxel and Cisplatin
- C

Single agent Carboplatin
- D

Single agent Topotecan
- E

Single agent Caelyx

Explanation



- B

Paclitaxel and Cisplatin

This patient has locally advanced stage III ovarian cancer and has undergone tumour debulking in the form of a hysterectomy and bilateral salpingo-oophorectomy. Subsequently patients tend to receive chemoptherapy – patients with a good performance status are offered combination chemotherapy with carboplatin and paclitaxel (Option B) as per NICE guidelines.

- A

Gemcitabine and carboplatin

Gemcitabine and carboplatin is a potential treatment option upon relapse following first line treatment.

- C

Single agent Carboplatin

Single agent carboplatin Using combination chemotherapy (with a platinum based compound and a taxol) is optimal as there is approximately an 8% increased response compared with single agent carboplatin alone.

- D

Single agent Topotecan

Single agent topotecan is a possible second line option for ovarian cancer.

- E

Single agent Caelyx

Single agent Caelyx may be used as a potential second line option for relapsed ovarian cancer.

36567

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Average

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Session Progress

Responses Correct:	0
Responses Incorrect:	99
Responses Total:	99
Responses - % Correct:	0%

Back to Filters

Question 100 of 102

A 54-year-old man comes to the clinic for review some 10 weeks after undergoing a Whipple’s procedure for pancreatic carcinoma. He has recovered well and just returned to his job working in an office. Examination reveals a BP of 105/70 mmHg, pulse is 80/min and regular. He has a large abdominal scar, his BMI is 20.

Investigations:

Hb	10.0 g/dl
WCC	7.1 x10 ⁹ /l
PLT	198 x10 ⁹ /l
Na ⁺	137 mmol/l
K ⁺	4.0 mmol/l
Creatinine	100 mmol/l
ALT	22 U/l
ALP	95 U/l
CA19-9	23 U/ml (<37)

Which of the following may have been a risk factor in developing pancreatic cancer?

- A

Systemic lupus erythematosus (SLE)
- B

Familial adenomatous polyposis (FAP)
- C

Occupational exposure to diesel exhaust
- D

Non-steroidal anti-inflammatory drugs (NSAIDs)
- E

Statins

39040

Submit

Previous Question

Skip Question

Calculator

Normal Values

Question 100 of 102

Investigations:

Hb	10.0 g/dl
WCC	7.1 x10 ⁹ /l
PLT	198 x10 ⁹ /l
Na ⁺	137 mmol/l
K ⁺	4.0 mmol/l
Creatinine	100 mmol/l
ALT	22 U/l
ALP	95 U/l
CA19-9	23 U/ml (<37)

- | | |
|---|--|
| A | Systemic lupus erythematosus (SLE) |
| B | Familial adenomatous polyposis (FAP) |
| C | Occupational exposure to diesel exhaust |
| D | Non-steroidal anti-inflammatory drugs (NSAIDs) |
| E | Statins |

- | | |
|---|--------------------------------------|
| B | Familial adenomatous polyposis (FAP) |
|---|--------------------------------------|

A Systemic lupus erythematosus (SLE)

C Occupational exposure to diesel exhaust

- Pooled/meta-analyses have demonstrated no effect on pancreatic cancer from occupational exposure to diesel exhaust. There is a link between air pollution and lung cancer.

- D Non-steroidal anti-inflammatory drugs (NSAIDs)

E	Statins
---	---------

- Some studies have demonstrated a possible protective effect in some malignancies although this remains contentious.

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1 2 3

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Session Progress

Responses Correct:	0
Responses Incorrect:	100
Responses Total:	100
Responses - % Correct:	0%

Back to Filters

Question 101 of 102

A 67-year-old man attends Accident and Emergency with a 2 week history of uncontrollable headaches which have been increasing in intensity. They are not relieved by a combination of paracetamol and ibuprofen. He has also noticed oedema affecting his face and arms over the past few days. He smokes 30 cigarettes per day and has a chronic cough, which has become productive of blood tinged sputum over the past month. On examination his BP is 155/90 mmHg, pulse is 90/min and regular, and he looks in pain. He has a plethoric face and dilated veins over the upper body.

Investigations:

Hb	10.9 g/dl
WCC	9.1 x10 ⁹ /l
PLT	181 x10 ⁹ /l
Na ⁺	137 mmol/l
K ⁺	4.5 mmol/l
Creatinine	122 micromol/l
Calcium	2.71 mmol/l
ALP	125 U/l
ALT	75 U/l
CXR	Right hilar mass consistent with bronchial carcinoma

Which of the following is the most effective management for his SVC obstruction?

- A

Chemotherapy
- B

Methylprednisolone
- C

Radiotherapy
- D

Stenting
- E

Systemic thrombolysis

40124

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Previous Question

Skip Question

Calculator

Normal Values

Back to Filters

Question 101 of 102

A 67-year-old man attends Accident and Emergency with a 2 week history of uncontrollable headaches which have been increasing in intensity. They are not relieved by a combination of paracetamol and ibuprofen. He has also noticed oedema affecting his face and arms over the past few days. He smokes 30 cigarettes per day and has a chronic cough, which has become productive of blood tinged sputum over the past month. On examination his BP is 155/90 mmHg, pulse is 90/min and regular, and he looks in pain. He has a plethoric face and dilated veins over the upper body.

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Hb	10.9 g/dl
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- A

Chemotherapy
- B

Methylprednisolone
- C

Radiotherapy
- D

Stenting
- E

Systemic thrombolysis

Explanation ⚙

D Stenting

The clinical vignette corresponds with superior vena cava obstruction, likely secondary to lung malignancy.

Stenting is recognised to provide rapid symptomatic benefit in 95% of patients and rapid restoration of the normal pattern of flow. However, stenting is used less frequently in potentially curable cancer such as lymphoma.

A Chemotherapy

Urgent chemotherapy is an alternative to stenting for patients with curable chemosensitive cancers e.g. germ cell tumours, lymphoma. It is used as an addition to stenting for other cancers such as small cell lung cancers.

B Methylprednisolone

In cases of first presentation of a suspected malignancy hold off on steroids unless there is evidence of cardiorespiratory compromise as they can compromise interpretation of subsequent biopsies.

C Radiotherapy

Radiotherapy may be recommended if the occlusion is not amenable to stent placement, but this is not the most effective treatment.

E Systemic thrombolysis

Full anticoagulation should be given, where appropriate, for those with evidence of thrombus. Prophylactic anticoagulation or antiplatelet therapy should be considered as there is a high incidence of thrombus with intravascular stents. Systemic thrombolysis is not indicated.

40124

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Next Question

Previous Question	Tag Question
Feedback	End Session

Difficulty: Average

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Session Progress

Responses Correct:	0
Responses Incorrect:	101
Responses Total:	101
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Back to Filters


Question 102 of 102

A 75-year-old man with metastatic prostate cancer is admitted to the medical admission unit following a GP referral for uncontrolled pain. He is currently on zoladex injections 6-monthly and 0.5 mg dexamethasone for his prostate cancer. His PSA remains stable at 18. Other medication includes atenolol and paracetamol. A week ago, his GP prescribed codeine 30 mg and ibuprofen 400 mg, both to be taken as required. Since then his abdominal and back pain has increased leading to his emergency admission. On admission he is haemodynamically stable. His urine dipstick is positive for protein (++) and he has not opened his bowels for several days.

What would be the most appropriate management?

- A

Nothing: his pain is due to the underlying malignancy


- B

Try subcutaneous morphine next to avoid overloading the patient with tablets
- C

Try to continue giving his pain relief on an as-required basis
- D

Laxatives and anti-emetics are often needed with analgesics
- E

Try tramadol instead of codeine to alleviate pain

70790

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Previous Question

Calculator

Normal Values

Question 102 of 102

What would be the most appropriate management:

- 

- D Laxatives and anti-emetics are often needed with analgesics

A Nothing: his pain is due to the underlying malignancy

- A Nothing: his pain is due to the underlying malignancy

B Try subcutaneous morphine next to avoid overloading the patient with tablets.

- Try subcutaneous morphine next to avoid overloading the patient with tablets

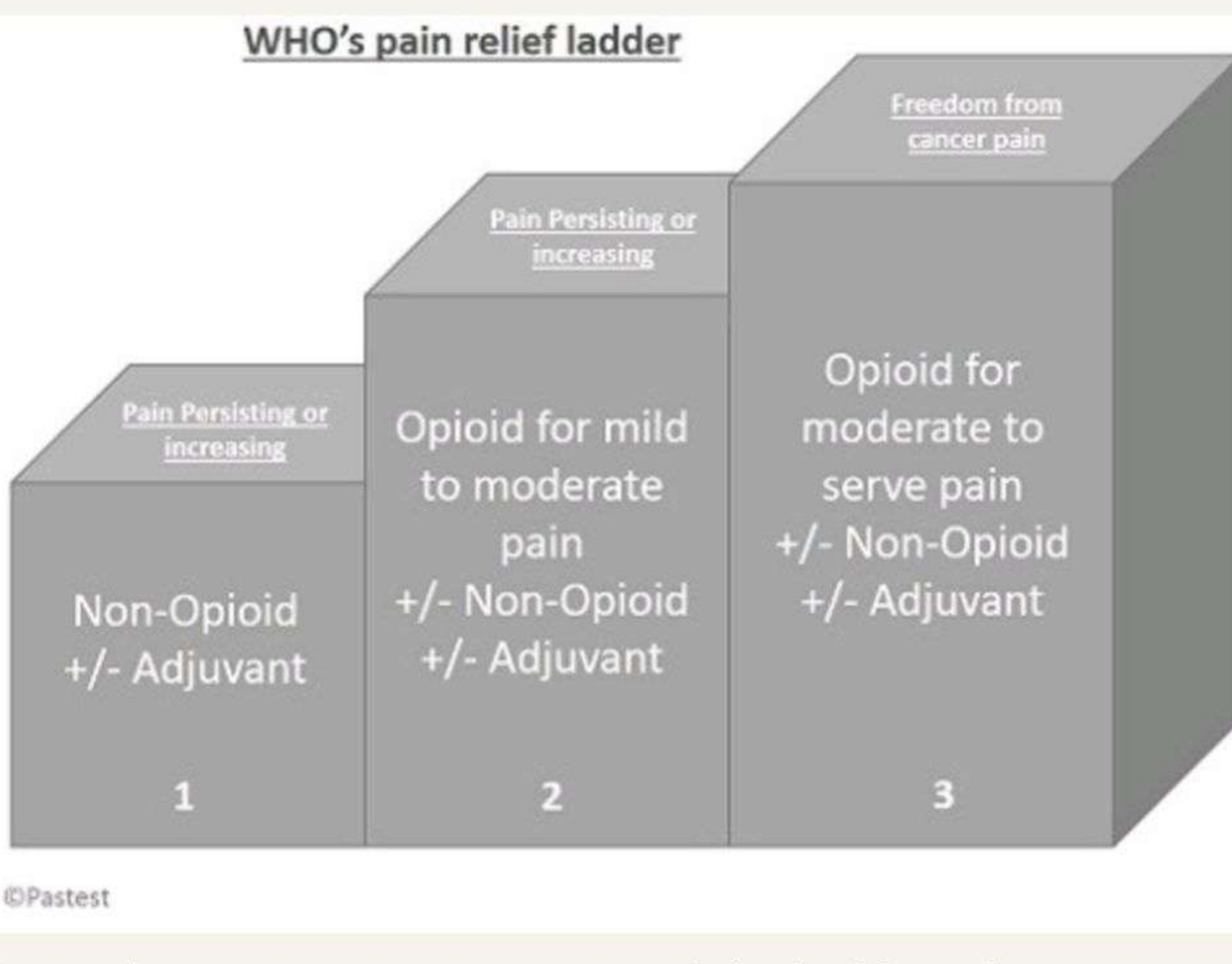
C Try to continue giving his pain relief on an as-required basis.

- C Try to continue giving his pain relief on an as-required basis

E	Try tramadol instead of codeine to alleviate pain
---	---

- E Try tramadol instead of codeine to alleviate pain

WHO's pain relief ladder



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[Previous Question](#)

Tag Question

Feedback

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